RAILROAD GAZETTE

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Contributions.

Locomotive Blows and Bridges.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I have read with great interest in the *Railroad Gazette* of July 20, the article on the first page concerning the result of the locomotive hammer blow, and am curious to know the writer. It sounds much like a conversation that I had with some one at the last convention of the American Society of Civil Engineers, and this was the first time that I had heard of such extraordinary effects. I confess that I know little about the subject but I should suppose that maintenance of way men must have observed these effects frequently; or at least have seen them without knowing the causes. I do not believe that bridges often get such blows for I do not see how the floor system could stand up to them, particularly the stringers. On bridges of any magnitude these very high speeds are not kept up, but the short bridges must have to catch it. This matter is so entirely out of the line of my observation and experience that I can contribute nothing but my ignorance to a discussion of it, but I should be greatly pleased and instructed if some of your readers who know more about the subject would tell us more. BRIDGE ENGINEER.

[The letter above is from one of the ablest and most distinguished bridge engineers of the country. Although it adds nothing to knowledge of this important subject, we print it as showing how little the average bridge engineer actually knows about the tremendous stresses that are brought upon the structures which he designs, by excessive counterbalance run at very high speeds.—EDITOR RAILROAD GAZETTE.]

Side-Lights on the Strike.

BY OUR SPECIAL CORRESPONDENT.

It was early determined by the American Railway Union that the supreme effort to win the strike should be made at Chicago. If it succeeded there, it would be an easy matter to extend it. If defeated at Chicago "sympathy" strikes at other points would avail nothing. This was also clearly recognized by President Cleveland when he determined to mass all the troops at Chicago. Hence for historical purposes the strike was at that point. Now that the excitement has in a measure died out, it is possible to review with some approach to accuracy some phases of one of the most daring, albeit foolish, attempts to bring about a "social revolution" by a sympathetic strike.

The leader was shrewd, keen, ambitious, and magnetic, but the defeat of the strike was as certain on the 26th of June as on the 14th of July. It was only a question of how long it would take. Puffed up with his easy victory on the Great Northern, he came to Chicago seeking a pretext to still further increase his following at the expense of the older organizations. Failing to find any grievance of his own association he caught at the idea of fathering the Pullman strike. The general public sympathized to a considerable extent with the Pullman strikers, without inquiring much as to the merits of the controversy. It was enough that Pullman was rich and the strikers poor and in some instances suffering. The public was also prepared to give sympathy to the American Railway Union and did for a few days while the "peaceful" strike was being arranged for. But the railroad managers were not deceived. When on June 22 the A. R. U. voted to assist the Pullman strikers by "boycotting" Pullman cars, the managers read between the lines the intent of Debs to force recognition from his organization, and on June 25 they adopted a resolution which stated, among other things that—

Whereas, Said boycott is in relation to matters over which we have no control, and in which we have no interest, and

Whereas, It is necessary that these companies determine for themselves what cars they shall or shall not handle:

Resolved, That the proposed boycott, being confessedly not in the interest of any employees of said railroad companies and said employees, is unjustifiable and unwarranted.

That we hereby declare it to be the lawful right and duty of said companies to protest against said proposed boycott; to resist the same in the interest of their existing contracts and for the benefit of the traveling public, and that we will act unitedly to that end.

No other statement of the policy of the association was issued. The strike leaders issued columns of appeals and statements to the public.

On July 13 the General Manager sent out another copy of these resolutions, adding: "We have endeavored to faithfully carry them out."

The turning point of the strike was on the afternoon of July 7, when the troops fired on the mob at Loomis street. From that time the mob had a wholesome respect for the soldiers. The threat of martial law implied in the proclamation of President Cleveland, caused the strikers to put forth every effort to restrain the more turbulent members and quiet the mobs. Martial law meant certain and speedy defeat. If the mobs could be held off and this avoided, they hoped to demonstrate that the roads could not get men enough to run their trains and thus give opportunity to recover some of the lost ground. So far as the strike proper was concerned, the roads were ready to resume operations on July 4th, had they been furnished with adequate protection.

Prior to the ordering out of the troops the assertion was made by the roads that they could move their trains if they were given protection. This was denied by the strikers and scoffed at by the governor and the mayor. The truth of these statements is best shown by the official report of General Miles, which states that on July 7, when the rioting was at its height, no roads were running freight trains and only nine were moving mail and passenger trains, but on July 8, with the Federal, State and Municipal forces in control, 23 roads moved freight, passenger and mail trains, and from that time until the withdrawal of the troops every road continued to send out and receive all classes of trains with a considerable degree of regularity, under military protection.

No accurate statement can yet be made of the direct damage to the roads from the strike. The legal departments are now engaged in making up the statements, but it will be some time before any official information can be obtained. The Illinois Central, the Pittsburgh, Cincinnati, Chicago & St. Louis and the Chicago, Burlington & Quincy are the greatest losers from destruction of cars. The aggregate loss of the three roads from this cause alone is probably $600,000. The Pittsburgh, Fort Wayne & Chicago suffered a loss of probably $20,000 from incendiarism. The Chicago, Rock Island & Pacific, the Lake Shore & Michigan Southern and the Chicago & Grand Trunk were the other principal losers from this cause. Probably $10,000 each would cover the item on these roads. From such data as is now obtainable, I should estimate the direct loss to the roads from property destroyed from July 3 to 8 at about $700,000. The greater portion of this was inflicted by fire July 6 and 7. The looting and burning of cars was confined principally to what is known as the Stock Yards district. The Illinois Central suffered severely at Burnside, and the Burlington at Western avenue. Many of the cars destroyed were loaded. To these must be added some 300 cars overturned and wrecked in the various yards; 21 buildings of all kinds burned between July 7 and 13; a number of costly wrecks on the Illinois Central and the Rock Island; a wreck on the Chicago Great Western at Maywood; damage to tracks and road beds which was continuous and so general that it was impossible to report it with any attempt at detail. That the shops and round houses of the Rock Island and the Illinois Central were not burned is solely owing to the opportune arrival of troops. Several attempts were made to fire them, but were fortunately frustrated. The same is true of the entire plant at Pullman.

It will probably never be known how many people were killed during the rioting. It is certain that 26 deaths are directly attributable to this cause. General Miles reports 33 men killed or injured from July 6 to 12. The number of wounded is even more difficult to ascertain, as in most cases friends of the victims assisted them to cover before the arrival of police, none but the more seriously wounded being found. The soldiers generally fired to maim and not kill. It is safe to say that 200 of the rioters received wounds from either the soldiers or the police. In the attack at 49th street July 7, over 40 persons were known to have been injured.

The behavior of the troops, both Federal and Militia, was admirable and received the hearty commendation of the officers and the department. It would have been easy to kill. That the order to fire was not given and that the troops remained passive in the face of the howling, reviling, missile-throwing mobs, often outnumbering the soldiers twenty to one, is the best testimonial to their bravery, and discipline.

The positions which the governor of Illinois and the mayor of Chicago took in the strike will not soon be forgotten. No one was surprised at the action of the governor, but many were surprised that the mayor should be so short-sighted as to apparently lend his aid to the strikers in an attempt to gratify a personal grudge against Mr. Pullman and to further political ends. It will be hard for his apologists to justiy his inaction in view of the facts. What were the conditions prior to July 3, when the Federal government was appealed to for aid? The property of every road in the city, with the exception of the Chicago & Northwestern was in the hands of the strikers and the mobs. Cars were being overturned, engines "killed," new men and officials stoned and slugged, tower men and crossing men driven from their posts with no intervention on the part of the police. Yet Mayor Hopkins kept telling the reporters that there was no trouble that the police were not able to take care of. These statements were true in most cases. It was not because the police were unable to cope with the mob that the rioting continued. The Chicago police hold an enviable record for bravery and efficiency. It was because they were given to understand that they were not to interfere. On June 27, Superintendent Brennan is quoted as saying: "We will do what we can to preserve peace and protect property. The railroads, however, must understand that the police have other duties than to protect railroad property." On July 4, after the arrival of the Federal troops, the mayor and sheriff sulked, and the former arranged for a conference with Messrs. Debs, Howard and the Council Committee for July 5. On July 5 the mayor suddenly decided to go to the scenes of rioting and look the ground over. On his return he changed base and gave orders to the police department which caused Superintendent Brennan to say: "Every effort will be made to keep the tracks clear and give the railroad companies an opportunity to operate their roads. The tracks must be kept clear and the strikers must be kept back." No one conversant with the situation doubts for a moment that if this order had been given on June 26th it would have been unnecessary to call on the government for assistance. On the next day the mayor called on the governor for militia. After that there was little cause for complaint. With the arrival of troops the leaders of the A. R. U. knew their case to be desperate.

No statement has been made regarding the policy of the roads respecting the re-employment of the strikers, further than that each road will take independent action and will not take back any man against whom violations of law and order are proved, and that none of the new men who are competent will be discharged. Each striker on making application for reinstatement will be placed on the list and his case considered on its own merits. One difficulty is likely to confront the men, however. Most of the roads had more men than they needed when the strike took place. They had hesitated to discharge any, hoping that business would pick up and they would be able to keep them all. Now that the men have discharged themselves, they can hardly find fault if the roads take on only sufficient men to operate such trains as are required to take care of the business that is offered.

Considerable comment was caused early in the strike as to why some of the brakemen, firemen and engineers joined the strikers as individuals when their own brotherhoods disclaimed any participation in the strike. These men will probably have to take the consequences without any assistance from the brotherhoods. Further, any brotherhood man out of a job was at liberty to take the place of a striking A. R. U. man without affecting his standing in his own brotherhood. The action of the old brotherhoods as individuals and as bodies in this strike will probably help them with the railroads in future. No matter how much the agitators may howl about the oppression of labor, every sane man in the employ of the railroads in Chicago, will testify, if he is perfectly frank, that there never was a time when railroad employes as a whole were so well treated as now and that if ever there was a time when it was policy to let well enough alone it was the present.

The case of the Chicago & Northwestern during the strike was peculiar. It seems that there were a few of the firemen and engineers who were undecided where they stood. The switchmen and most of the freight crews were affected with the strike fever. Finally the passenger firemen caught it. They "went out" and then came back, concluding they had made a mistake. Then some of them thought surely they should go out and tried it again. All this gave great encouragement to the A. R. U., but when finally, after a few days of uncertainty, the men came to their sober senses, they threw the A. R. U. overboard and went on with their work. As a matter of fact the Northwestern maintained the most satisfactory passenger service, both suburban and through, of any of the roads during the strike, but the officials had to "hustle" and they had to exercise a great deal of forbearance with the men.

The continuous running of the "Diamond Special" on the Illinois Central, was a great source of trouble, as it acted like a red flag to a bull with the strikers. The force of this will be apparent when it is remembered that the fight was begun on that road and that this is the crack Pullman train of that road, and one of the best that runs into Chicago. True, it was run only under great difficulty; was derailed once, but still it was run. It looked as though the managers were determined to run that particular train if every other train on the road was laid off, and they did it.

In conclusion I wish to say just a word about the General Managers' Association. Some months ago I had occasion, in the pursuit of my newspaper work, to look up the workings of this association, and a few observations regarding it seem appropriate at this time in view of the widespread assertion that the sole object of the association is to crush out organized labor. Nothing can be farther from the truth. The association fully recognizes organized labor and one of its fundamental rules is not to interfere in any way with the relations existing between the employees of its members and the road, unless asked to do so for the purpose of arriving at an amicable settlement of differences. In such case, the offices of the association are expended in endeavoring to bring about a mutual agreement between the parties and avoid any friction. Its

machinery is always available for this purpose, but only when the road itself has exhausted its resources to bring about such an understanding. Its defensive machinery is never to be called into operation until a strike is actually in progress and assistance is asked by one of the members. If, then, the association as a body decides to take hold of the strike, it will prosecute it as an association affair. It is absurd to suppose that any road will court trouble, simply because it happens to belong to an organization of this kind. The members believe that a uniform and consistent handling of the various questions coming up from time to time is calculated to inspire confidence in the employees that they will be fairly treated, no matter what road they may be employed on.

Recent Tests of the Dean Compound Locomotive.

We give below the results of a comparative test recently made on the Old Colony Railroad between Boston and Fall River in express freight service. The engines run in the test were compound No. 832 and single-expansion No. 833, and were of similar design except in the features peculiar to the compound. The single-expansion engine had just been through the shop, and had the valves and seats faced, while the compound had been in service 2½ years and has never had the valves removed from the chests for any purpose.

The compound engine was tested in April and May, 1894, and made 25 round trips and was followed by engine No. 833, which made 12 round trips in May and June. It will be noticed that the average number of cars and weight of trains were very nearly the same in each case.

		Compound No. 832.	Simple No. 833.
1	Number of round trips made	25	12
2	Number of miles run during test	2,450	1,176
3	Average number of cars to train, loaded basis	18.7	19.6
4	Number of car miles made during test, loaded basis	45,817	23,103
5	Average weight of loaded cars per round trip, (tons)	435	456
5a	Total weight of loaded cars hauled (tons of 2,000 lbs.)	1,065,245	537,145
6	Total coal used during test, pounds	105,275	79,100
	Average speed, miles, per hour	21	21
7	Average weight of coal used per round trip	4,211	6,592
	Weight of coal used per ton mile (pounds)	.099	.147
	Weight of coal used per car mile (pounds)	2.3	3.4
	Number of miles run per ton (2,000 lbs.) of coal	46.54	29.73
	Number of pounds of coal used per mile	42.97	67.26

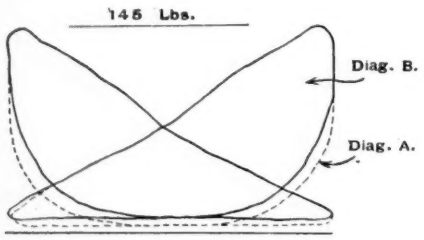
These figures show a saving of 32.65 per cent. for the compound engine on a two-mile basis, or an average saving per trip of 36.12 per cent.

An interesting point in connection with the results shown by the above figures, is the fact that last September a No. 8 Mack injector was taken off and replaced by a No. 7 as it was found that the injector first used was too large to work satisfactorily. Even with the smaller injector it is difficult to graduate the feed fine enough when hauling fast freight with 25 cars.

Exhaust Nozzles.

The committee of the Master Mechanics' Association which investigated the effects produced by changes in exhaust nozzles and steam passages, presented a report at the convention recently held which gives much information on a subject which has received very indifferent attention. Supplemental to the committee's report, the indicator diagrams shown with this will be interesting. The diagrams were taken from the same locomotive with which the committee made the experiments which were reported to the convention. Diagrams B, shown in full lines, were taken from the locomotive, while the exhaust pipe was provided with a tip 4½ inches in diameter; when diagrams A, shown in broken lines where not coincident with diagrams B, were taken, a tip 5⅛ inches in diameter was used.

The locomotive has been running in service for some time now, equipped with the 5⅛ inch nozzle, and doing excellent work under all conditions from high speed and short cut-off to slow speed and long cut-off. The locomotive is now considered the best of its class on the road, the Milwaukee, Lake Shore & Western, and the officers have been much surprised at the difference produced by the use of the larger nozzle. It shows economy of fuel over the other locomotives of the same class, and takes two more cars than the rating for the class over the steepest grades, and does this with the valve cutting off at nine inches.



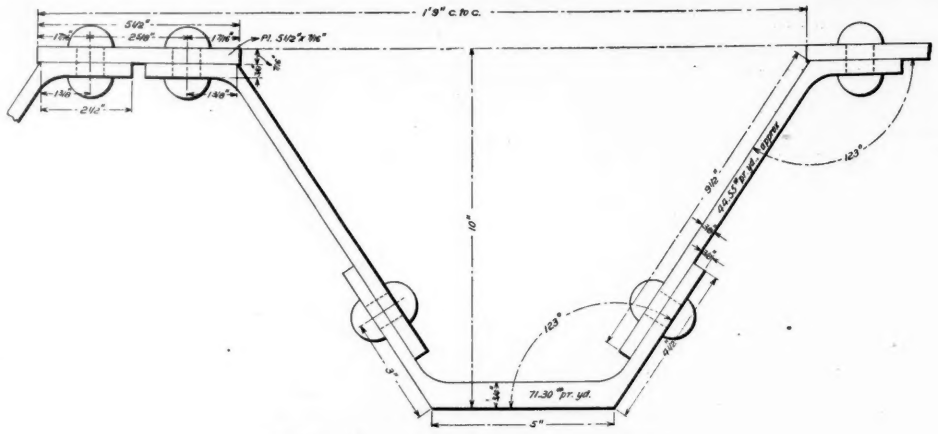
The comparative data for the two cards shown, is given in the following table:

	Diagram A.	Diagram B.
Diameter of nozzle	5⅛ inches.	4½ inches.
Revolutions per minute	210.9	210.9
Miles per hour	40.0	40.0
Mean effective pressure	67.9	60.3
Indicated horse power	388.4	350.8
Lbs. of water per I. H. P.	20.9	21.9
Cut off	9 ins.	9 ins.
Inside clearance	⅛ in.	⅛ in.

A New Solid Bridge Floor.

The local conditions at the new Providence (R. I.) Terminal have brought out a design for the bridge floors now under construction by the Berlin Iron Bridge Co. for the Gaspee and Promenade street bridges, quite different from anything yet made,—a new combination of well known shapes. The two bridges are of about the same area, each spanning about 250 lineal feet of street, 70 feet in width, and each supporting 12 tracks, together with passenger platforms (owing to nearness to the station building), and each having a level top surface.

A solid-floor, ballasted bridge was determined on, with a floor of a minimum thickness. One peculiar condition required that after construction it should be possible to lay tracks in any other position than the one determined upon at the time of construction. Further, the large area made it impossible to treat the surface of the structure so



The Solid Bridge Floor of Francis & Dawson.

that the water falling thereon should be shed off at the ends or sides of the structure, as is usual in the case of bridges or viaducts of reasonable width transversely to tracks. It therefore became necessary to provide that the water should go through the structure in such manner as to effect quick drainage, without spilling or dripping over the entire area to the annoyance of the passers on a busy city street, and to prevent water standing in the ballast, to the detriment of the girder construction.

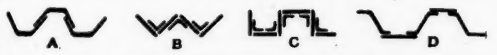
A logical arrangement of girders for the purpose required that the floor troughs should be about eight feet long and supported at each end. To support the assumed load required a series of troughs about ten inches in depth. The deepest available rolled troughs with a tight bottom being only six inches, and even this having awkward features in shop construction, led to the design under construction which is best described by reference to the illustration herewith.

The particular merits claimed for the combination are, first, simplicity in rolling; second, adaptability to power riveting; third, elimination of difficulty in accurate spacing center to center of shapes; fourth, smooth base on which to rest; fifth, avoidance of rivet holes in bottom or tension flange, when treated as a girder; sixth, water tight bottom (which is the all-important factor in some cases); seventh, a variability in height within reasonable limits, while preserving all of the other features claimed for it.

The shapes are so placed that the water collected in the troughs is discharged at the ends and flows into gutters and down spouts placed for the purpose. The weight per square foot does not exceed that of the simplest forms now made, of the same depth, which forms do not cover all the other named advantages.

Letters patent on the above combination of shapes for bridge flooring have been granted to Geo. B. Francis and E. P. Dawley, Resident Engineer and Division Engineer, respectively, on the Providence work, who invented the combination.

While several good designs of floor shapes had already been invented, each of them lacks some essential feature for the work of like character to that now under way in Providence. The common Lindsay form, A, has only been successfully rolled in this country of a total depth of six inches, though this trouble may yet be overcome. But even then it would be, it is claimed, inferior to the new design. It is difficult to space the shapes accurately, owing to slight variation in the flare of troughs, there being no place to give and take. Difficulty is also experienced in using a power rivetter on the diagonal lines.



The shape B invented and patented by D. H. Andrews, of the Boston Bridge Works, lacks the positive water tight bottom, as does also the Thompson shape C, though these have other merits as to variation in height, etc. The shape D of the Pencoyd Construction Co. also lacks the positive water tight bottom and robs the tension flange of valuable metal. None of these shapes except the Lindsay form have a good seat for bearing, on account of the rivet heads.

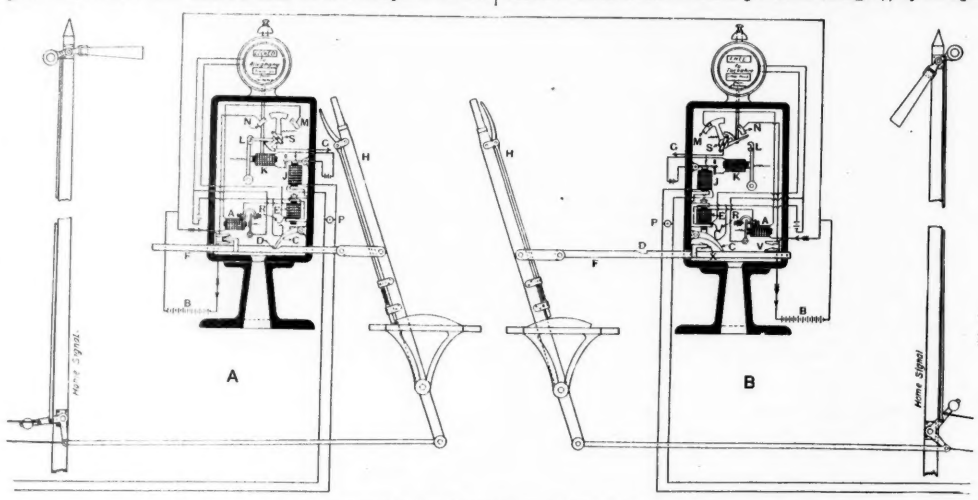
Sufficient attention has not yet been given to ballast floor bridges in the item of drainage. The supporting of the ballast and deadening of noise have been looked after, but the prevention of drip and the annoyance therefrom has been almost entirely neglected, though incidentally it can readily be taken care of.

Leonard's Block Signaling Apparatus.

On perhaps no other single track road in the United States has there been so great a development in signaling during the past five years, proportionately to the traffic, as upon the Chesapeake & Ohio. Beginning with the adoption of the Hudson signal for train orders, of which not less than 227 are now in use, the Koyl parabolic semaphore was subsequently introduced for blocking at tunnels, and the Harrington double arm semaphore for block signaling from station to station.

For some time these signals were operated by the operators at each end of the blocks, by the use of simple Morse telegraph apparatus, but the advantage of an electro mechanical lock being fully appreciated by the officers of the road, Mr. M. B. Leonard, Superintendent of the Telegraph Department of the road devised an apparatus by which the block signals are so connected together as to render it necessary that the operators at both ends of each block shall co-operate simultaneously in order to release either of the signals to permit a train to enter the block.

The semaphore controlling each end of the single track block is held in the normal position (danger), by its oper-



Leonard's Lock and Block Apparatus.

ating lever being detained therein by the pawl-shaped armature of a local magnet which engages in a notch on a horizontal sliding bar connected to the lever. There is a normally open battery at each end of the block; a line wire between the two block offices, and a ground switch at each office so arranged as to put to ground at that office either the wire or the battery.

Referring to the diagram, it will be observed that the apparatus is contained in a vertical box about 10 in. wide by 10 in. deep, 2 ft. 6 in. high, placed on a low stand in front of the levers, with a visual and audible indicator on top

(one side of the box is removed to show the mechanism). The pawl-shaped armature C by which is prevented the withdrawal of the lever H and lowering of the semaphore, is lifted by energizing the local magnet E through the closing of the local points of the relay A, which are normally open, relay A being in circuit with the aerial wire between the two offices. The line switch by which either the battery or the wire is put to ground at each station, is shown at S—(the handle passing through the side of the box)—and consists of a V-shaped piece, one of whose arms is connected by flexible wire to the ground and which makes a knife edge contact with the plate M or N, connected respectively to the relay A and the battery B. The other arm engages, when the switch is operated, with the armature L of the local magnet K, controlled by the track relay J, and thus locks the ground switch in a central position free from contact with either of the two plates. A retractile spring brings back the ground switch to plate M, its normal position, when released by the armature of magnet K. In the wire circuit between the battery B and plate N there is a pair of contact points which are open when the semaphore lever is withdrawn, and closed by the contact arm X carried on the sliding bar when the lever is returned to its normal position.

The normal position of the apparatus with the semaphores at each end of the block in the "danger" position, is as follows:

Armature C has fallen by gravity into notch D of sliding bar F, preventing the withdrawal of operating lever H. The opening in the battery circuit at V is closed by contact arm X, but the circuit is still open at plate N. The track relay is closed, thereby closing magnet K and attracting armature L. Ground switch S is in contact with plate M, grounding the aerial line through relay A at each office.

A train approaches station B, running toward A; the operator calls, over the block wire, upon station A to release the B semaphore; A turns his ground switch to the left, opening the circuit of relay A, but making contact with plate N, thereby grounding battery B and causing a current to flow over the wire to station B. The current passing through relay A at station B, thence to plate M, and switch S to ground, energizes relay A, closes the circuit of local magnet E and raises armature C out of notch D, and at the same time closes the contact points R of the indicator bell, rinigng the bell to notify the operator that his signal can be placed at "clear" and the train permitted to enter the block. As soon as the train has passed his office B returns his semaphore to the normal position, danger, and the armature C of local magnet E falling into the notch D of sliding bar F, automatically locks the lever, and thereby the semaphore, in the danger position, from which it can only be withdrawn by a repetition of the action of operator at A.

To insure the return of the lever to its normal position, the indicator bell keeps up its ringing as long as the semaphore stands at clear; the operator cannot forget or overlook it, and consequently changes his lever as soon as the train has passed, in order to stop the noise.

As soon as the operator at A has turned the handle of his ground switch to release the semaphore at B, the second arm of the switch throws over the armature L, of magnet K, which is held over as long as the first arm of the switch is in contact with plate M and battery B connected to ground. When the switch handle is released, the retractile spring carries the switch backward until the second arm is caught and held fast by the projection on top of armature L, which thereupon prevents the movement of the ground switch in either direction and makes it impossible to again release the semaphore at B until the train for which the semaphore was first released has entered upon and passed over the block. When this train reaches A the wheels close the short length of track circuit at A thereby releasing the lever arm and permitting the ground switch to resume its normal position ready for use in again releasing the semaphore at B when desired. It will be noted that as soon as the ground switch leaves plate M the circuit from relay A is opened, and the current from battery B at station A has no path to the ground through the relay A at that station, but must pass over the wire to the ground at station B and operate relay A there.

Should it be necessary, however, by reason of the train breaking in two at station B, or on account of any shifting there, to again release the semaphore at station B, this can be done by the operator at A pressing the push button P (placed in his office at some distance from the operating lever), which short-circuits the track relay and thereby releases the ground switch.

The diagram shows the operator at station A to have released the operating lever at station B, and the operating lever there is pulled over to permit the train to enter at B's end of the block. A's ground switch is locked up and cannot again be used until the train from B has passed A, but B's ground switch is in its normal position. Let us suppose that A now calls upon B to release his (A's) signal to permit a train to enter the block at A's end, unmindful of the fact that there is a train still on the block. Unless B has returned his operating lever to its normal position, there is a break in the battery circuit at V, and though the battery may be grounded by the ground switch no current will flow. But let B return his lever to normal position, thus closing the opening in the battery circuit, and again turn his ground switch; what happens then? The train being on the block, A's ground switch is still locked up by the track relay's local magnet, and the ground plate is, therefore, not in contact with either of the plates M or N, consequently, the aerial wire is open at station A, and the relay A there cannot be energized until the arrival of the train from station B, which in passing over the track circuit releases ground switch S, and closes the aerial line circuit.

The same operation occurs no matter which end of the block is manipulated. This apparatus fulfills the requirements of the American Railway Association's recommendations in regard to controlled manual block signaling, and its operation is somewhat similar to that of the other well known systems, though the expense of installation and of maintenance is claimed to be considerably less. The operator at one end of the block, by turning his ground switch, may release the signal lever of the other operator; in so doing his own ground switch is automatically locked up, and the lock circuit broken thereby; and this can be restored and made complete only by the passage of the train for which the lever was first released, onto, over and off the insulated section of track, so that "the signal governing the entrance to a given block cannot be cleared until the last train which received a clear signal to enter that block has passed out of it, and the operator at the end of the block has given his consent." For use on a double track road the method of operation would be the same as that here described.

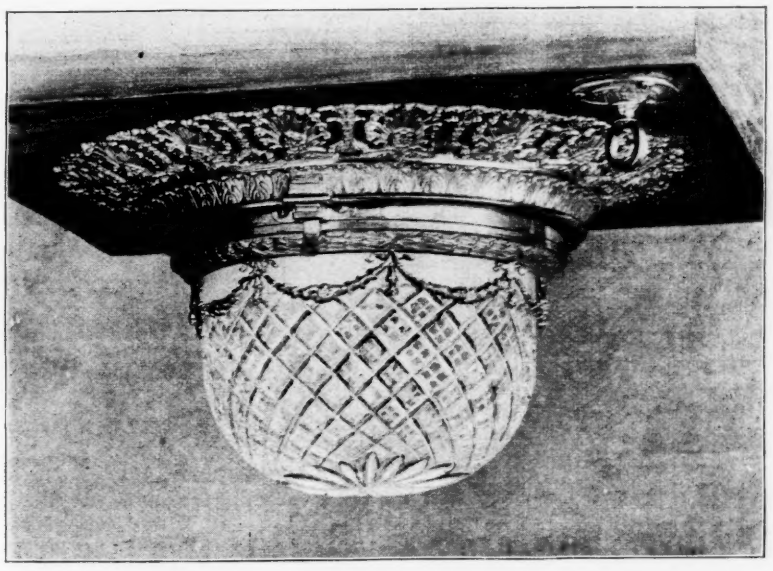
Several sets of this apparatus have been in use on the Chesapeake & Ohio for the past fifteen months, giving entire satisfaction, and have not cost a dollar for repairs, attention or maintenance since they were installed. The battery required at each office does not exceed 8 cells of Samson No. 2 type, depending upon the length of the block. It is probable that this system of interlocking signals will be adopted for blocking the entire road.

This signal as above described, is susceptible of the modifications necessary to adapt it to the varying requirements of practice. One such is the attachment of an electric motor, which, by means of accelerating gearing, automatically shifts the semaphore without requiring the presence of a local operator, upon the unlocking of its respective lever. Another feature of special interest is that the interlocking mechanism and its connections may be attached directly to any standard manual semaphore, already in position, at a correspondingly small cost.

This system in its various forms is the property of and is manufactured by the Electric Selector & Signal Co., No. 45 Broadway, New York City.

A New Pintsch Lamp.

The engraving, reproduced from a photograph, shows a handsome car lamp for burning Pintsch gas that the Safety Car Heating & Lighting Co. has recently brought



A New Pintsch Lamp.

out. This lamp is the result of considerable experiment, the aim being to produce a lamp standing much closer to the ceiling than the ordinary form, to meet the taste of those who may want a more compact appearance. In dimensions and form it suggests the roof lamp in universal use in England, but is far handsomer in appearance and more powerful. This new lamp extends down only eight inches from the ceiling and is easily adapted to harmonize with the ornamentation. The illustration shows a special design intended for the finest sleeping cars. The globe is of cut glass, hiding entirely the lamp itself, while allowing good illumination. It is surrounded by ornamental metal work. The center of light being so high the shadows cast are reduced to a minimum, and the arrangement in the roof furnishes the usual strong exhaust, removing heated air and utilizing the air current to keep the lamp and ceiling cool. This new lamp is made to give a light of from 30 to 50 candle power, and burns with the unformity and steadiness, under all conditions of ventilation and motion of the car, that we are familiar with in the best forms of Pintsch lamp.

Remarkable progress has been made by this company in the development of all the details of its business and not the least is the improvement of its lamps. We have often called attention to the establishment of gas works at many of the principal railroad centers, which makes it practicable for almost any railroad company to obtain gas at sufficiently short intervals. There are now 35 of these plants in daily operation, with distributing pipes into 53 railroad stations. The remarkable growth of the use of Pintsch gas was illustrated by a diagram in this journal last June (page 410). In 1883 it was not in use on a single car in the United States. In 1888, 418 cars were equipped for Pintsch gas lighting, and in 1894, 6,390. We quote from the recent report to the Master Car Builders' Association the following summary of replies with regard to the use of the light, sent to the Secretary:

The Philadelphia & Reading R. R. Co. is changing gradually to Pintsch light for their system.

Maine Central R. R. Co. Pintsch gas is very satisfactory.

Union Pacific system. Pintsch light adopted, and equipping six or seven cars per month.

Central Railroad of New Jersey. Patrons well pleased with Pintsch light, and is considered the best.

Cleveland, Cincinnati, Chicago & St. Louis Ry. Co. Have adopted Pintsch light, and equipping fifteen cars per month.

Denver & Rio Grande R. R. Co. Pintsch light is used on all cars that can be charged at existing gas plants.

Boston & Albany R. R. Co. Pintsch light is liked, and is being extended.

Chicago, Rock Island & Pacific Ry. Co. Changing to Pintsch light as fast as convenient.

Michigan Central R. R. Co. Recently adopted Pintsch light but have only commenced equipping cars.

Wagner Palace Car Co. Changing to Pintsch light as rapidly as possible as it gives a very satisfactory light with a minimum of expense.

Pullman Palace Car Co. Applying Pintsch light largely at request of railroad companies using the cars. Find its use is a great saving in the matter of carpets and upholstery, as oil lamps will leak more or less and injure them.

The company has devised arrangements for using this gas for heating buffet urns and in the ranges of dining and private cars, and for such purposes it has been used with much satisfaction, displacing coal oil. While the use of this gas is entirely safe with the ordinary equipment, the company provides a valve to prevent the escape of gas in case of breakage of any of the pipes of the car in case such additional protection is desired. The United States Railway Mail Service specifies this system of lighting very generally in the equipment of postal cars, and the gas has also been adopted by the United States Lighthouse Board for lighted buoys.

Experiments on the Movement of Long Rails.

[Last May we addressed to Mr. A. Torrey, Chief Engineer of the Michigan Central Railroad, a letter asking about certain experiments which he is making to learn some facts about the movement of long rails. His answer to the letter follows and we publish engravings of the diagrams which he sent therewith.]

While the experiments, as I hope to make them, are by no means complete, some facts have been developed which may be of interest, and I take pleasure in sending them to you. I enclose diagrams, at the top of the first sheet of which you will see that the 1,000 ft. of track which the diagrams refer to, is composed of one rail 800 ft. long, one rail 500 ft. long, two rails 250 ft. long each, and two rails 100 ft. long each. I originally intended to construct these long rails by electrically welding 30-ft. bars, but found that it would not be convenient to apply such process of uniting the bars at the time I was otherwise ready for the experiment. To determine some points prior to the use of welded rails, I built up the rails from 30 ft. bars, holding the individual members in abuttal by means of the splices while the drilling for the turned bolts was done. The holes for the turned bolts I refer to are shown in the elevation of the joint which I enclose. The rail ends were not planes, but warped surfaces, consequently the abuttals are not surface abuttals.

I used a device for the expansion joints which serves the purposes of free movement of the rails and accurate observation of its extent, but which is probably inadequate for hard and continuous service. The rail was laid last fall in a main freight track where the traffic is in one

direction only, and consists of all the east bound freight business of our main line. The speed over this track is slow, not exceeding 20 miles an hour. Brakes are often set and engines sometimes reversed, as it is in the vicinity of an interlocker.

The points I wished to determine were:

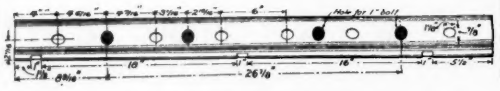
(1.) Whether a long rail would move freely enough on the ties to be safe under sudden and extreme changes of temperature.

(2.) What provisions would have to be made to hold a long rail from creeping under traffic in one direction only.

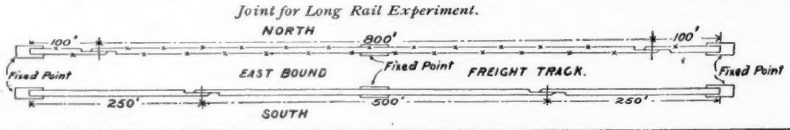
(3.) Having been forced to use rails held in abuttal instead of welded, whether the joint would be stiffer with the rail ends in abuttal than the ordinary joint is.

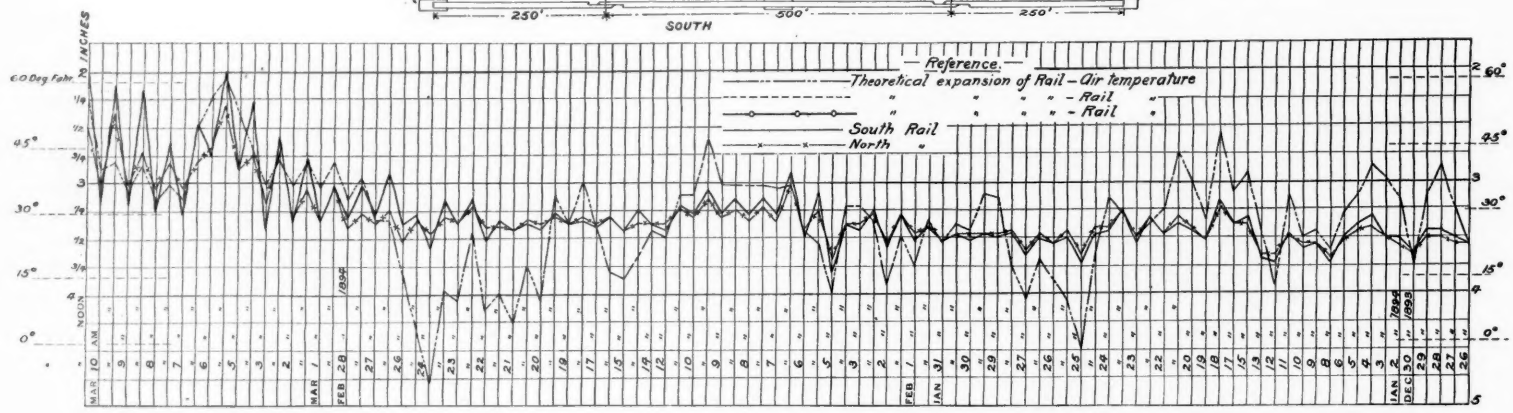
(4). Whether the life of the rail would be appreciably greater if the opening between the heads of the rails was eliminated and the splice relieved from the wear occasioned by the movements of the rail due to temperature changes.

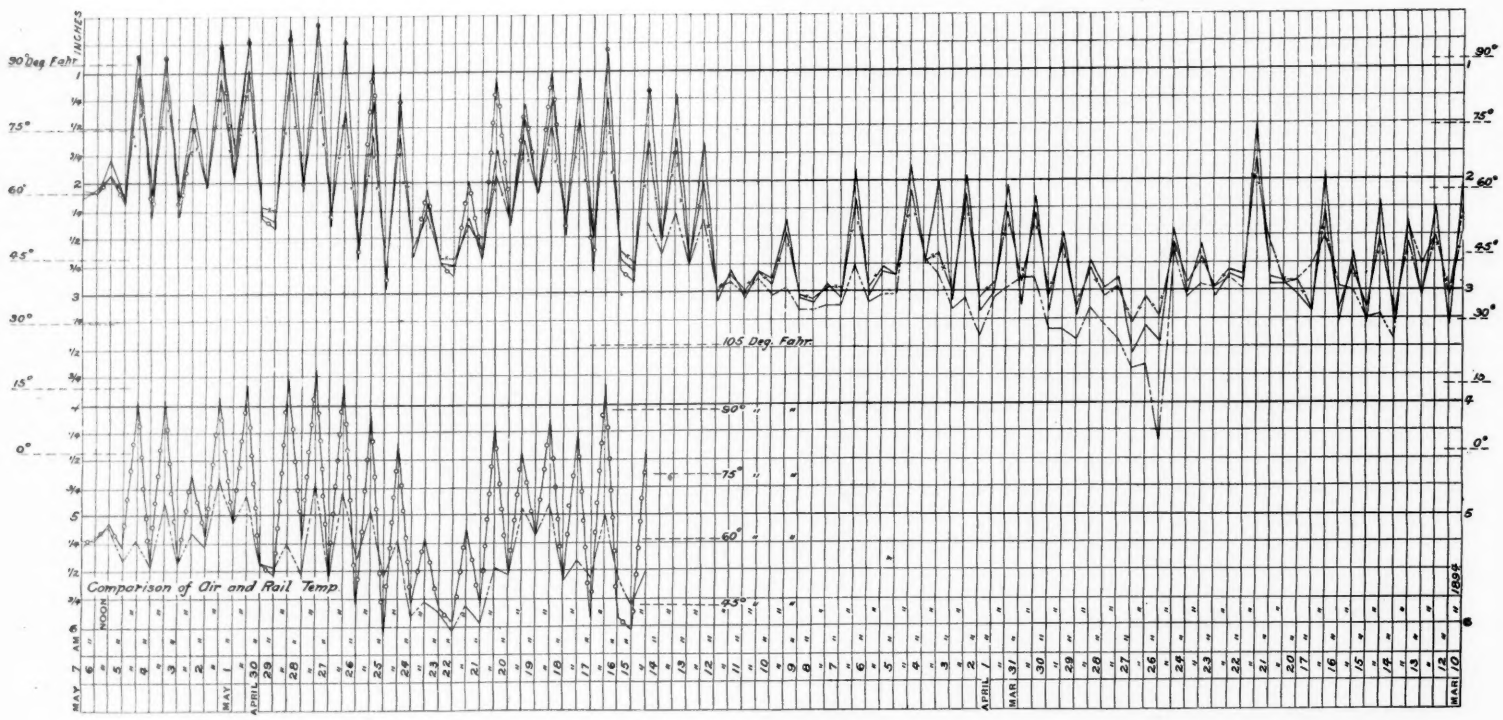
The first point is answered in a degree by the diagrams

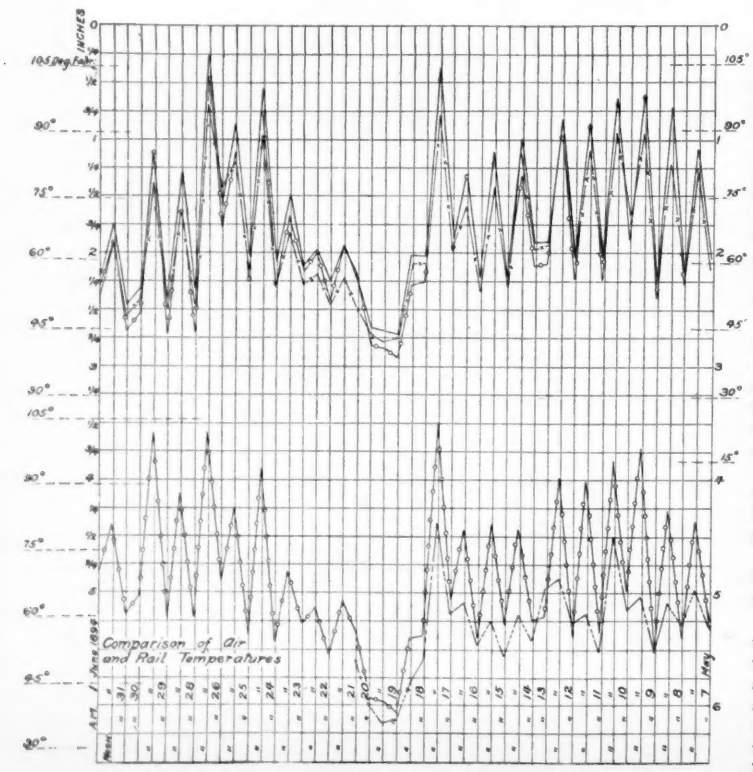


Joint for Long Rail Experiment.









Diagrams of Movements of Long Rails.—Torrey's Experiments.

of the rail movements, on which are shown by one line the average movement at the two joints on one side of the track, by another line the average movement at the two joints on the other side of the track, and by the third the amount of movement theoretically made by a rail 500 ft. long, subjected to the temperatures marked on the sidesof the diagrams.

The second point is measurably answered by experience. Under the speed of such traffic as has been over this track, the rails have not dragged the ties to which they are securely fastened, since those ties were connected to as many other ties as one 14 ft. plank would reach at each point of fastening.

The third point is answered by the result of tests made at the University of Michigan. These tests showed the stiffness of the full rail to be 1, the stiffness of the joint with abutted rail ends to be ½, and the stiffness of the joint with ⅛ in. expansion and without the turned bolts to be ⅓. The tests were made with the rails upright and inverted, and the proportionate stiffness was the same for each position.

The answer to the fourth point is not at hand yet. No looseness of parts has yet been discovered, and no nut at a joint has been tightened since the rail was laid last October.

From December 26th, 1893, to January 20th, 1894, measurements of the movement at the expansion joints were made in the morning. From January 20th to the present time measurements have been made at 7 a. m. Sundays and at 7 a. m. and at noon on week days.

From December 26th, 1893, till April 14th, 1894, the theoretically proper range of movement shown on the diagrams has been based on temperatures obtained from the U. S. Signal Office. From April 15th till the present time the theoretically proper range of movement, as shown on diagrams, has been based upon temperatures obtained from a thermometer imbedded in a piece of rail alongside the long rail. The diagram shows that the rail movement in the colder months was considerably less than would be forecast from the changes of temperature during those months, if such forecast should be made in the light of the sensitiveness of the rail to changes of temperature, as shown between May 17 and May 20. It may or may not be the case that the rail does not assume the air temperatures when the ground is frozen.

Such are the facts as I have observed them. Probably not enough facts have been observed to form any conclusions, and I shall continue the present form of observations throughout a greater range of temperature before trying such long rails under higher speed traffic.

It is only fair to the rail I have been describing, to say that defects of construction entered into it, which would naturally be discarded in its successor, if it has one, and the results as to smooth and noiseless passage of the wheels would probably be more favorable under better conditions.

A. TORREY, *Chief Engineer.*

The Canadian Soo Canal.

Hugh Ryan, who has the contract for the Sault Ste. Marie canal, says that the work on the Canadian canal is practically finished and the canal is very nearly ready to be opened for navigation, only some little work on the gates remaining to be done. Hon. Mr. Haggart, the Dominion Minister of Railways and Canals, intends to visit the canal immediately after prorogation of Parliament, and it is expected that the opening for traffic will take place very shortly after his return.

The Electric Lighting of Railroad Trains.

BY M. B. LEONARD, M. AM. SOC. ELECTRICAL ENGINEERS.

[At the Detroit meeting of the Association of Railway Telegraph Superintendents held last June, Mr. Leonard read an important paper on the electric lighting of railroad trains. We give the paper below nearly in full.]

Much interest has been taken in the system so successfully developed by Mr. Geo. Gibbs, Mechanical Engineer of the Chicago, Milwaukee & St. Paul, in which the lamps are supplied with current direct—without the intervention of storage batteries—from a 15 kw. Edison dynamo directly connected to an 18 h. p. Westinghouse automatic engine carried in summer on one end of the baggage cars on two of their through trains, and in the baggage compartment of their combined buffet cars on two others, taking steam from the locomotive and attended to by the baggage master. In winter the equipment is transferred to the special light and heat tenders, which are also fitted up for the purpose of supplying steam heat to the train.

Nearly 100 cars have been already equipped with 16 c. p. 110 volt lamps and wired on the equipotential system. The number of lamps per train supplied by the dynamo varies from 130 to 225, and the cars have made nearly 196,000 miles each without a single accident. This system has been giving entire satisfaction, and will doubtless be further extended, though there seems to be one drawback, in that the lighting by the electric current ceases whenever the cars are shifted to or from the train. It has been proposed to remedy this by using small storage batteries supplying a few low voltage lamps in each car, with an automatic switch that throws them in circuit when the locomotive or the light and heat tender is cut off from the train. A novel feature of this system is the fixed berth lamps designed by Mr. Gibbs. They are ornamental in appearance, economical in operation, and much more satisfactory than the flexible cord arrangement heretofore used.

The cost of the equipment and the present expense of operating this system are said to be, figured on a 7 car train:

For baggage car, including engine, dynamo, switchboard and wiring	$1,250.00
2 coaches, @ $127.00	254.00
2 parlor cars, @ 311.00	622.00
2 sleeping " @ 245.00 . . $490.00 = $2,616.00 per train, or per car $374.00.	

For a 7-car train, comprising baggage or combined car, 4 coaches, 1 parlor car and 1 sleeper, the average cost of equipment would be about $338.00 per car.

The expense of operation per trip of 430 miles is estimated as follows:

Attendance on train (½ wages of 2 men)	$2.62
Supervision	.62
Lamp renewals (2 at 40c.)	.80
Oil and waste	.22
Miscellaneous supplies and labor	.20
Interest and depreciation at 10 per cent. on cost of train equipment	.87
Total	$6.20

or per car per day, $0.88—per car, hour, 6.3c.

If a ten-car train be run, the cost per car hour would be correspondingly less; in fact it is stated that the cost of labor and repairs of four such trains in 1892 was, per month:

For labor	$650.00
" material . . . . . $175.86, or $825.86 per month	
Cost per car per day of 9 hours' lighting	78.6c
Being for labor	61.9c
" " material	16.7c
and per lamp per hour, approximately	½ a cent

The Combined Dynamo and Storage Battery System first introduced by the Pullman Palace Car Co. in 1887, does not seem to be meeting with the degree of success anticipated. Many of the roads upon which it has been used are gradually abandoning it, although during January, February, March and April last, the Pullman Company operated 42 cars in this way, 24 on the Florida Special between Jersey City and St. Augustine, and 18 between New York and Chicago on the Pennsylvania Railroad, the cost of which is set forth by Mr. A H. Bauer, chief electrician of the Pullman Company, to have been $\frac{6}{10}$ cents per lamp hour. In his valuable paper read before the American Institute of Electrical Engineers in June, 1892, Mr. Bauer stated the cost of equipping a six-car Pullman train with this system to be:

For combined baggage car, including Brotherhood engine and Eickemeyer dynamo, switchboard and wiring	$2,027.80
3 sleepers, each $762.50	2,287.50
1 observation and sleeper	749 40
1 dining car	743.50

Total cost $5,808.20 per train. Average per car, $968.00. Number of lamps per train 172 of 64 volts, using 98 of 16 c. p. and 74 of 8 c. p. 32 cells of the American Storage Battery Company's 150 amp. hour type carried under each car in the train, average period of lighting being about 10 hours per day. For labor and material required to light three such trains or 18 cars from August 1890 to February 1892, a period of 19 months, the average total cost per month was shown to be $1,265.95, or per car per day, $1.99. Labor per month, including wages of train electricians and those at terminal station, $712.39. Labor per car per day, $1.11. Material per month including cost of battery renewals was $511.51. Material per car per day, .87. Making average total cost per lamp per day, 7.17 cents, varying from $3\frac{8}{10}$ cents to $12\frac{5}{10}$ cents. The item of material varied from 12 cents to $2.04 per day, average being 87 cents, as stated. The cost of the labor was constant and did not change.

The System of Lighting by the Storage Battery alone, and charging the batteries at terminal points, has been greatly improved since the first trials of it were made by the Pennsylvania Railroad in 1882, and as regards economy of operation, it has, at least on one road, shown as satisfactory results as the Pintsch gas system. The various companies using this method believe that the success is due to the excellence of the particular type of battery installed, and in nearly every case remove the batteries from the cars at the end of the run in order to be charged, thus eliminating the expense of skilled electrician for each train, and the taxing of the locomotive for steam to operate the plant in the combined dynamo and storage battery system just described.

For lighting by this method the six parlor cars operated by the Pullman Palace Car Co. between Jersey City and Washington and four similar cars between Jersey City and Philadelphia, each fitted with 27 lamps of 16 c. p. fed from 32 cells of the American Storage Battery Co.'s 150 amp. hour type, I am advised by Mr. Bauer that the expense is as follows:

Cost of equipping each car, including necessary batteries, lamps and wiring, $650. Total for 10 cars, $6,500.

Operation.	
Interest on $6,500.00 @ 6 per cent	$390.00
50 per cent. depreciation on positive plates	1,006.00
33 " " " " negative "	666.66
5 " " " " sockets, battery boxes, wires and switches	50.00
Lamp renewals	40.50
Cost of charging per year	350.00
Cost of labor, handling and repairing batteries, etc	600.00
Total	$3,097.10
Cost per lamp per year	$11.47
Cost per lamp per day of 5 hours	$3\frac{14}{100}$c
Cost per lamp per hour	$\frac{63}{100}$c

On the four cars carrying 26 lamps of 16 c. p., 60 volt, and 32 cells of 150 amp. hour capacity that were operated by the Pullman Company between Chicago and Cincinnati, and Chicago and Indianapolis, the batteries being charged on the cars at the terminal points, obviating the expense and damage in transferring the cells, it is stated that the cost of their operation from September, 1891, to January, 1892, inclusive was $314.02.

Per month	$62.80
Per day	2.09
Per day per car	.52$\frac{25}{100}$
Per lamp per day of 6 hours' lighting	2c
Per lamp per hour	$\frac{33}{100}$c

The cost of the power used for charging the batteries is not included in these figures, as the engine and boiler were also utilized in furnishing power for other purposes.

The experience of the Chesapeake & Ohio Railway Co. in connection with the storage battery system will doubtless prove interesting to those considering the subject. Discarding the combined dynamo and storage battery system on account of the expense and trouble involved, the management of the Company, after a series of tests, decided to adopt the type of storage batteries brought out by the Dayton Manufacturing Co., and made in the manner described in the patents issued to L. W. Silvey. [Described in the *Railroad Gazette*, June 1.—EDITOR.]

The cars are brilliantly lighted and receive no attention whatever during the run. They are fitted with 24 volt lamps, as follows: coaches, 10 lamps; combined cars, 10; express, 8; liners, 18; postal cars, 10; sleepers, 20; baggage cars, 3. In all 59 cars have been so equipped but in 26 of them oil is still used, though these cars can be lighted by electricity without any further outlay whatever than the cost of the storage batteries required for this purpose.

A statement recently prepared for General Manager Stevens, shows the cost of lighting the 33 cars by this system during 1893 to have been as follows:

Cost of building in which charging plant is located	$1,800.00	
2 dynamos and fixtures	3,401.00	
1 70-h. p. engine	806.00	
1 boiler and setting	550.00	
Wiring station, etc	58.00	
Extra armature	399.50	
1 transfer truck	63.00	
Total	$7,078.50	
Depreciation on plant @ 6 per cent		$424.70
Interest " " " " "		424.70
Cost of equipment of		
5 diners @ $71.30	$356.50	
4 postal cars " 69.50	278.00	
8 coaches " 57.60	460.80	
8 combined cars " 37.60	303.20	
8 express " " 30.40	243.20	
33 cars	$1,641.70	
Depreciation thereon @ 6 per cent		$98.50
Interest " "		98.50
Cost of 76 sets of Silvey batteries, 12 cells each, @ $180.00 per set	$13,680.00	
Interest thereon @ 6 per cent		$820.80
Total charge per year on capital account		$1,867.20
Cost of maintenance per year for labor		4,677.77
" " " " " materials for renewals, etc		4,285.29
Cost of fuel used at plant, avg. 5 lbs. per h. p. hour. 10 hours per day, 365 days = 639 tons @ 85c., del'd at Covington, Ky		543.15
Total expense for the year		$11,373.41
Cost per car per year	$344.65	
" " " " month	28.72	
" " " " day, avg. 14 hours' lighting	0.944	
" " " " hour of light	0.067	
Averaging the number of lamps per car at 9.3 of 16 c. p. each, or a total of 148.8 c. p. per car, the cost per lamp per hour appears to be		0.72 cents

The Motive Power Department of the Chesapeake & Ohio has gone somewhat further into the expense of lighting its passenger equipment during 1893, and shows that the cars lighted by the Pintsch Gas System on the C. & O. Railway cost for that period as follows:

For expense of fitting up the following equipment, with lamps &c., tanks under every car holding 167 cu. ft. of compressed gas each, together with the necessary fittings:

5 Sleepers,	each having	11	four brnr. lps.	@ $555	=	$2,775
4 postal cars,	" "	5	" "	" 396	=	1,584
6 coaches,	" "	4	" "	" 366	=	2,196
4 combined	" "	3	" "	" 336	=	1,344
2 express	" "	2	" "	" 336	=	672
In all, 21 cars		115 lamps with 460 burners				$8,571
Depreciation on this equipment per annum @ 6 per cent						$514.26
Interest charges @ 6 per cent						514.26
Gas supplied as per invoices, 2,161 tanks or receivers, in all 360,887 cu. ft. @ 85c. per tank of 167 cu. ft., or about $5.00 per 1,000 cu. ft.						1,836.86
Maintenance of equipment, breakage of glass, etc., at $6.00 per car						126.00
Cost of labor for gassing the cars						131.40
Total cost for 1893						$3,122.78
Averaging the number of lamps per car at 5½ of 4 burners of 6 c. p. each, or 132 c. p. per car, the cost per car, per year, was						$148.70
Per car per month						12.40
" " " day of 3.5 hours' lighting						0.407
" " " hour of light						0.112

The average number of hours' lighting is based on the amount of gas supplied each tank or receiver, as per bills rendered, allowing ⅓ of one cubic foot per burner per hour for consumption, according to the lighting company's published estimate, the Pintsch Compressing Co. supplying the gas.

For the oil equipment on the C. & C. passenger cars, the cost of

18 mail and express cars, was		$1,127 50
16 baggage cars		458 50
9 combination cars		317 50
2 parlor cars		330 00
5 sleepers		847 50
83 coaches		6,335 00
4 business or officers' cars		457 00
Total for 137 cars.		$9,873 50
Depreciation on above, 6 per cent	$592 41	
Interest " "	592 41	
Labor, oil and other material	17,969 46	
Total expense for the year	$19,154 21	

Averaging the number of lamps per car as 5.4 single light lamps, with the No. 3 dual burner, equal to about 12 c. p. each, or 64.3 c. p. illumination per car,

The cost per car per year is shown to have been	$139 80
" " " day of 14 hours' lighting	.3878
" " " light hour	.0277

Comparing the expense per car per day of 14 hours' lighting of the three systems, and basing the illumination per car at 148.8 c. p. for this purpose (the exact amount of the electric light equipment), the cost is stated to have been for last year as follows:

Pintsch gas	$1.085 per car day.
Electric light	.944 " "
Oil	.551 " "

The electric light being about 13 per cent. less than the gas, but about 70 per cent. greater than the oil. The C. & O. Railway Company has been using the Silvey battery system over two years and the figures given therefore are the results of actual experience, much care having been used to secure their accuracy, though the rate of depreciation is rather small.

Personal observation convinces me, however, that the basis of 14 hours' lighting per day is excessive, as after midnight only a few lamps are kept burning in either coaches or sleepers, and none whatever in the diners. 10 hours, I believe, would be a more accurate average of the daily period of lighting, and at the figures stated for 148.8 c. p. of illumination per car, or an average of 9.3 lamps of 16 c. p., the cost for the Silvey system of electric lighting should be taken as per car per day 94.4 cents; per car per hour, 9.44 cents.

This basis of lighting would make the figures per day of 10 hours for the Pintsch gas system, with compressed gas invoiced at ½ cent per cu. ft., or $5.00 per 1,000 cu. ft.—which even on the 14 hours' basis seems to have been erroneously calculated—changing them as follows: With 24.8 burners of 6 c. p. or 148.8 c. p. of illumination per car for gas alone, 77.5 cents; proportion other operating expenses, 16.8 cents; total expense per car per day, 94.3 cents; total expense per car per hour, 9.43 cents.

And for oil lighting on a basis of 148.8 c. p. per car of illumination, or 12.3 single lamps with No. 3 dual burners, average 12 c. p. each, at the rate above stated for 5.4 lamps or 64.8 c. p. per car of 2.77 cents per hour, would make the cost, with the increased illumination, per car per day, 63.6 cents; per car per hour, 6.3 cents. Showing an evident error also in the computation of the cost of oil lighting on a 14-hour basis.

These figures, I am confident, will be found as accurate as it is possible to get them for the purpose of comparing the three systems of lighting, based as they are upon an equal amount of illumination per car for each. But it must be remembered that while the expense of oil lighting is less than gas or electricity, the amount of useful light is also less than the others owing to the bulky fixtures used in oil lighting intercepting the rays and preventing them from reaching that portion of the cars immediately beneath the lamp, so that for the same amount of candle power illumination per car, the Pintsch gas system gives better results than the oil, and the electric light better than the gas. It will also be noted that the C. & O. Railway pays an exceptionally low price for its fuel.

TO BE CONTINUED.

Train Accidents in the United States in June.

COLLISIONS.

REAR.

3d, on St. Louis, Chicago & St. Paul, near Alton, Ill., passenger train ran over a misplaced switch and into some freight cars standing on a side track, doing considerable damage. The engineer was killed and the fireman and six employees on a work train were injured.

14th, 2 a. m., on Lehigh Valley road, at Easton, Pa., a freight train ran into the rear of a preceding freight on the bridge over the Delaware river and the caboose and two cars fell into the river 80 feet below.

19th, on Wabash road, at Wild Creek, Ind., a freight train ran into the rear of a preceding freight, making a considerable wreck; engineer and fireman killed.

24th, on Baltimore & Ohio Southwestern, near Chillicothe, O., a freight train broke in two and the rear portion afterward ran into the forward one, wrecking 2 cars, which

fell off a high trestle. Three tramps were killed and 3 others fatally injured.

28th, on Pennsylvania road, near Reading, Pa., a passenger train ran into the rear of a preceding freight, badly damaging the engine and several freight cars. The fireman jumped off and fell under the engine and was killed, and another man was injured.

And 11 others on 6 roads, involving 4 passenger and 17 freight and other trains.

BUTTING.

1st, 3 a. m., on Cincinnati, Hamilton & Dayton, near Miamisburg, O., butting collision between a passenger train and a freight, badly damaging both engines and several cars. Five employees and one passenger were injured. It appears that the freight train neglected an order to keep out of the way of the pssenger train.

4th, on New York, Ontario & Western, near Oswego, N. Y., butting collision of locomotives; 2 employees injured.

7th, on Pennsylvania road, near Mount Union, Pa., butting collision of freight trains, wrecking 2 locomotives and a large number of cars. Two trainmen were injured, one of them fatally. It is said that a signalman failed to stop one of the trains according to orders.

8th, on Baltimore & Ohio, at Republic, O., butting collision of freight trains, making a bad wreck. One engineer was injured.

8th, on Georgia Pacific, at Nickajack, Ga., butting collision between a passenger train and a freight on a trestle bridge, wrecking both engines, the mail car and 3 freight cars, most of the wreck falling into the stream below. One fireman and 2 tramps were killed, and one engineer and one fireman were injured. The engineer of the freight forgot about the passenger train. The conductor tried to stop him, but was unable to do so in season.

11th, on Georgia Railroad, near Union Point, Ga., collision of freight trains, injuring one engineer and one conductor.

12th, on New York & New England, near Stillwater, R. I., butting collision between passenger trains 53 and 36, injuring 10 trainmen, one of them fatally. It is said that an operator made a mistake in writing the meeting point in a message for one of the trains.

And 6 others on 5 roads, involving 2 passenger and 10 freight and other trains.

CROSSING AND MISCELLANEOUS.

4th, at Perth Amboy, N. J., a freight train of the Lehigh Valley ran into a passenger train of the Central of New Jersey, at the crossing of the two roads. Two trainmen were injured.

8th, 11 p. m., on Chicago, Milwaukee & St. Paul, at Delmar, Ia., a passenger train ran into a part of a freight train which had been left standing on the main track, wrecking 2 freight cars which were piled upon the passenger engine and were burned up. A tramp in the freight car was fatally injured. The freight train had been taking on some cars at Delmar Junction; the front portion was backed against the rear portion on a side track and it was supposed that the two were coupled together but they were not, and the latter, consisting of 18 cars and a caboose, ran out upon the main track about a mile, and the fact was not discovered by any of the trainmen.

13th, on New York, New Haven & Hartford, at South Norwalk, Conn., a collision of freight trains switching in the yard wrecked a car containing naphtha. The naphtha took fire from a torch in the hands of a car inspector and exploded, burning 3 employees. A part of the wreck was burned up.

20th, on Pennsylvania road, in Philadelphia, collision between a switching freight and some empty passenger cars, wrecking one car and derailing an engine standing near by. Two trainmen were injured.

27th, on Wilkesbarre & Eastern, at Miners Mills, Pa., a freight train ran into some freight cars standing on a crossing, making a bad wreck. The engineer was injured.

30th, 3 a. m., near Arcadia, Kan., a stock train of the Kansas City, Pittsburgh & Gulf ran into a freight of the Kansas City, Fort Scott & Memphis at the crossing of the two roads. The engine of the former was overturned and the fireman was killed. It is said that the engineman was unacquainted with the road and did not stop for the crossing.

30th, on Richmond & Danville, near Rapidan, Va., a passenger train ran into the side of a freight train which stood on a side track but did not clear the main track, damaging 7 freight cars. One passenger jumped off and had both legs broken, and two trainmen and one tramp were injured.

And 5 others on 5 roads, involving 1 passenger train and 9 freight and other trains.

DERAILMENTS.

DEFECTS OF ROAD.

7th, on Houston & Texas Central, at Howe, Tex., a passenger train was derailed at a defective switch and the engine was wrecked. The fireman was fatally scalded.

7th, on Georgia Pacific, near Patton, Ala., a freight train ran upon a trestle bridge which was afire, and the engine and 8 cars fell down with the bridge and were destroyed by fire. Two trainmen were injured by jumping. The fire is believed to have been of incendiary origin as no train had been along for many hours.

8th, on Union Pacific, Denver & Gulf, near Golden, Col., a passenger train was derailed where the track was in bad condition in consequence of heavy rain and the engine and 3 cars were ditched. Two employees and 3 passengers were injured. The train was running slowly and it is thought that the baggage car being overloaded and top heavy, was the first to leave the track.

18th, on Bellaire, Zanesville & Cincinnati, near Woodsfield, O., a freight train broke through a trestle bridge and the engine and 2 cars fell into the river below. The fireman was killed and the engineer and one brakeman injured. It is said that the trestle had been shattered by lightning.

20th, on Southern Pacific, at Luling, Tex., a passenger train was derailed at a defective switch and the baggage car was overturned. The mail agent was injured.

And 5 others on 5 roads, involving 1 passenger train and 4 freight and other trains.

DEFECTS OF EQUIPMENT.

1st, on Missouri, Kansas & Texas, at Paris, Mo., a freight train was derailed by a broken axle and 2 men stealing rides were killed.

14th, 1 a. m., on Missouri Pacific, near Otterville, Mo., a freight train was derailed by a broken truck and 19 loaded cars were ditched. A brakeman was injured.

18th, 11 p.m., on Chicago Great Western, at Stillman Valley, Ill., several cars in a freight train were derailed by the pulling out of a drawbar which fell upon the track, and 3 of them were overturned. A lamp in a car of horses set fire to the wreck and 4 men were injured. Nine valuable horses were killed.

26th, on Louisville & Nashville, at Silver Creek, Ky., a freight train was derailed by a broken axle and 2 cars were wrecked. A brakeman was killed.

26th, on St. Louis, Vandalia & Terre Haute, at Kent, Ill., the locomotive of a freight train was derailed by the breaking of the front truck and the engine and 9 cars were ditched. The engineer was injured.

30th, on George's Creek & Cumberland, near Lonaconing, Md., a freight train was derailed by a broken axle and 4 cars fell off a high bridge. The conductor was injured by jumping.

And 9 others on 8 roads, involving 1 passenger train and 8 freight and other trains.

NEGLIGENCE IN OPERATING.

None reported that caused injury to persons, but of others there were 8, on 7 roads, involving 3 passenger and 5 freight and other trains.

UNFORESEEN OBSTRUCTIONS.

4th, 9 p. m., on Mobile & Ohio, near Columbia, Ill., a passenger train was derailed by a loose rail and the engine and first two cars wrecked. It is said that the rail had been maliciously loosened, probably by men who hoped to rob the train. The engineer and fireman were fatally injured. A man found near the wreck was arrested.

6th, on Chicago, Rock Island & Pacific, at Round Pond, Ok., a freight train was derailed at a point where rails had been taken up by citizens to punish the railroad for not complying with an ordinance limiting speed to 8 miles an hour through the town. The engine and 5 cars were derailed and several animals killed. The train was flagged, but, according to the reports, the enginemen had orders not to heed danger signals at that point. One report states that the citizens tried to stop a previous train by placing a house upon the track, but that the train crashed through the building and knocked it to pieces.

6th, on Northern Pacific, near Butler, Mont., a passenger train was derailed by a wrecked snow shed and the engine and first two cars were wrecked. Two trainmen were injured.

9th, on Colorado Midland, near Sloane, Col., a freight train was derailed by a landslide. While the men were clearing the track another mass of earth came down from the hill and knocked a car off the track, killing 2 employees and injuring 2 others.

9th, on Wabash road, near West Grove, Ia., several cars of a freight train were blown off the track by a hurricane when the train was running at considerable speed.

11th, on Chesapeake, Ohio & Southwestern, at McHenry, Ky., a freight train was derailed by a misplaced switch and a brakeman was fatally injured. It is reported that a switch was maliciously misplaced, probably by striking coal miners.

15th, on Greenfield & Northern, near Mt. Vernon, Mo., a freight train was derailed by a rock on the track and the engine and several cars were ditched. The engineer and fireman were injured, the former fatally.

20th, on Central of Georgia, near Millen, Ga., a passenger train was derailed by a malicious obstruction and the engineer and fireman injured.

21st, on Central of New Jersey, at Dryland, Pa., a freight train was derailed at a switch and several cars were wrecked. A boy stealing a ride was killed. A girl 12 years old turned the switch under the train under the mistaken belief that the telegraph operator at the station had motioned to her to do so.

22d, 3 a. m., on Chicago, Peoria & St. Louis, at Staunton, Ill., a passenger train was derailed at a misplaced switch and the engine was overturned. It is said that the switch had been maliciously misplaced and that the signal light was changed so as to indicate safety. The engineer was injured.

30th, night, on Illinois Central, at Grand Crossing, Ill., a south-bound passenger train was maliciously derailed by the mob connected with the strike at that point.

And 4 others on 4 roads, 4 freight trains.

UNEXPLAINED.

1st, on Chateaugay Railroad, near Bloomingdale, N. Y., a passenger car in a mixed train was derailed. Two trainmen were injured.

1st, on Minneapolis, St. Paul & Sault Ste. Marie, at Colton, N. D., a steam shovel, a boarding car and a platform car in a work train were derailed and ditched. One employee was injured.

9th, on St. Louis, Vandalia & Terre Haute, near Pocahontas, Ill., a passenger train was derailed and the engine and 5 cars were ditched, some of them falling down a bank. The fireman was killed, baggage master, porter and 6 mail clerks injured.

9th, on Union Pacific, at Denver, Col., an engine drawing a train of empty passenger cars was derailed on a curve while running at high speed and was overturned. The fireman was injured.

10th, on Central of New Jersey, near Elizabeth, N. J., a caboose being pushed by a locomotive jumped the track and fell into a ditch, also derailing the tender. The conductor was injured.

10th, on Boston & Maine at Biddeford, Me., the engine of a passenger train was derailed and overturned; 3 trainmen injured.

11th, on Burlington, Cedar Rapids & Northern, near Decorah, Ia., a car in a freight train was derailed and the fireman, who jumped off and struck against a fence, fell under the car and was killed.

18th, on Cleveland, Cincinnati, Chicago & St. Louis, at Batesville, Ind., a freight train was derailed and 10 cars were ditched. Two tramps were killed and 3 injured.

22d, on St. Louis Southwestern, near Mt. Pleasant, Tex., a freight train was derailed and 6 cars were wrecked. A trespasser was injured.

26th, on Norfolk & Western, near Dunlow, W. Va., a car in a freight train jumped the track and 10 cars were wrecked and fell down a high bank. A brakeman and a man stealing a ride were killed.

28th, on Kansas City, Memphis & Birmingham, near Horse Creek, Ala., a freight train was derailed and the engine fell down a bank. Seven cars were wrecked. The fireman was killed and 2 other trainmen were injured.

And 8 others on 6 roads, involving 2 passenger and 6 freight and other trains.

OTHER ACCIDENTS.

20th, on Marietta & North Georgia, at Hiawassee, Tenn., the locomotive of a freight train was wrecked by the explosion of its boiler. The fireman was killed and 2 other employees fatally injured.

20th, on Philadelphia, Wilmington & Baltimore, at Clayton, Del., one pair of wheels broke loose from the truck of a freight car and ran clear of the main track; and, the accident not being discovered, the train ran 11 miles to Dover without the wheels.

27th, on New York Central & Hudson river, near Lewiston, N. Y., a passenger car was badly damaged by rocks which fell from a derrick at a stone quarry near the track, and 5 passengers were injured.

And 1 other involving 1 passenger train.

A summary will be found in another column.

The Rochester Railroad Station Lamp.

Perhaps the most marked difference between railroad stations in country towns and those in cities is the insufficient lighting of the former at night, as compared with the latter. It is true that small stations have but few trains after dark as compared with the number running by daylight, and that, therefore, the need of artificial light is unimportant as compared with a station at which business is done at all hours of the night; but the trains which do run after dark, especially in the winter, are often important ones, nevertheless, and the convenience of the passengers using them demands that careful attention be given to lighting. And the numerous lawsuits, which every railroad attorney is familiar with, for damages due to alleged insufficient lighting of platforms and steps, makes this question a practical one financially.

In view of these self-evident propositions we are glad to call attention to a new lamp which has been brought out by the Rochester Lamp Co., of New York city. To those familiar with the ordinary house lamps of this company the accompanying cut needs no description, the outward frame or lantern being also familiar to everyone who has to do with outdoor lighting. As is well said by the manufacturers, a lamp with a flat wick is now a back number, even the most remote country stores being supplied with large lamps having central draft burners which compare well with gas and electric lights for brilliancy of illumination.

The lamp here described has already been well tested by use. Having the tubes at the sides for regulating the draft, with the usual perforated metal sheet, it burns as clear and steady as if in a parlor, in spite of the most furious wind. It will burn all night and gives from three to five times as much light as the flat wick burner usually seen in these outdoor lamps. The new pattern is made with either a bail or a post socket and is furnished with a 26-inch reflector when desired.

An Electric Passenger and Freight Railroad.

An electric railroad has recently been opened in Western Pennsylvania between the towns of Wilmerding and McKeesport. Wilmerding is about 14 miles southeast of Pittsburgh and well known as the Westinghouse Air Brake town. Four miles south of Wilmerding is McKeesport, with a population of 35,000, the seat of the National Tube Works and of other large industries. Between these towns is a mountain 1,200 ft. high, and until the electric road was built the only rail communication from one to the other was by way of Pittsburgh, a trip of 29 miles. Lately the McKeesport & Wilmerding Railway Co. was organized, and Messrs. Taylor, Romaine & Scott, of McKeesport, were engaged to make surveys for the route. They succeeded in getting a line over the mountain, although they have grades as steep as 11 per cent. and sharp curvature. The road starts from the Pennsylvania Railroad station in Wilmerding and in the outskirts of McKeesport connects with the McKeesport & Reynoldston Passenger Railway, a local electric road that has been in operation for several years. On the top of the mountain is a plateau, and as soon as the road was opened a small town, East McKeesport, sprang up here, where there are a hotel and picnic grounds, the grounds being lighted by electricity and designed to encourage their use by the people of the two towns.

The McKeesport & Wilmerding road has three 18 ft. passenger cars of the ordinary type, built by the New Castle Car Co., of New Castle, Pa. They have McGuire trucks, each with two 30 h. p. single reduction, Westinghouse motors of the No. 3 type. There are two open cars for summer use with similar motors. The freight, express and mail business between the towns now goes over the road and for this use the company has a special car of the same general dimensions as the passenger cars, but equipped with two 40 h. p. Westinghouse motors of the No. 10 type with No. 14 controllers.

These cars have ordinary hand brakes, and have also emergency track brakes; but we do not learn that these have ever been used. These latter consist of two shoes on each side, between the wheels, forced down on the rail by a special brake staff at each end of the car. This brake staff has a gear of four to one.

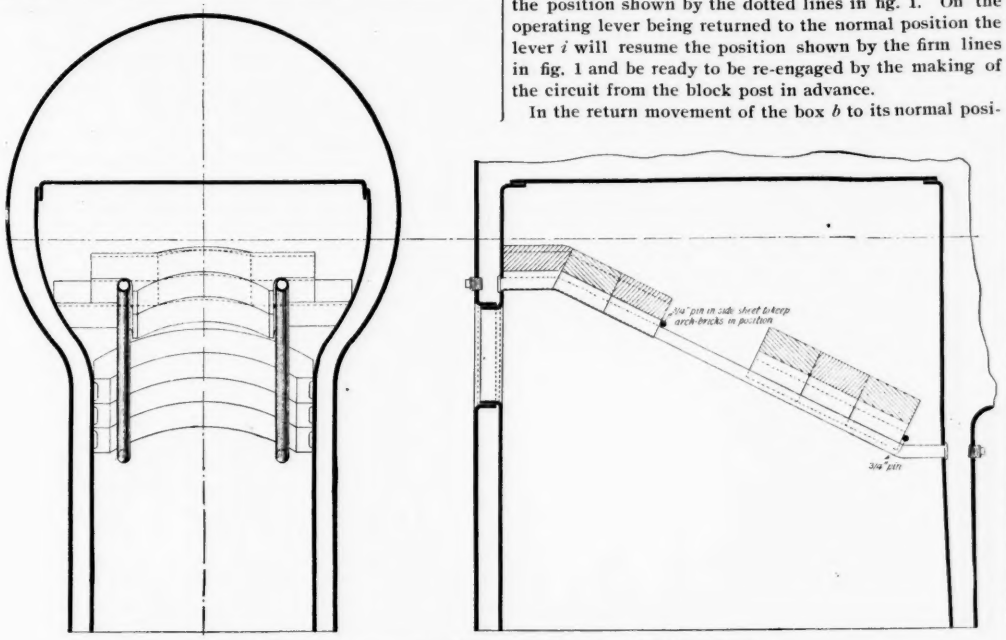
The power house and car barn are on the top of the mountain. In the station are two Pierpont boilers of 100 h. p. each working at about 110 lbs. pressure. There are two engines, one 250 h. p. Russell engine and one 90 h. p. Buckeye. The larger engine is belted direct to a Westinghouse, compound, multipolar generator of 150 h. p. capacity. The other engine is similarly connected to an 80 h. p. generator of the same type. The switchboard is equipped with the Westinghouse apparatus. The power house was placed on the top of the mountain because the company was able to purchase there several acres of valuable coal land and the coal for power is mined on the spot. Water is pumped up from the foot of the mountain by an electric motor.

The road is single track with turnouts. The rail is of T-section, 52 lbs. to the yard, with No. 4 copper wire, and connected to a ground return which is itself grounded at frequent intervals by plates buried 7 feet in the earth.

A Fire-Brick Arch for Locomotive Fire-Boxes.

In the *Railroad Gazette* of July 14, 1893, there appeared a description and illustration of a fire-box arrangement used on the Chicago & Northwestern, consisting of a fire-brick arch of the usual form at the front of the box and a cast iron deflector plate above the fire door. We show herewith a modification of this idea devised by Mr. R. Quayle, Master Mechanic of the Ashland Division of the same road at Kaukauna, Wis.

As will be seen by a reference to the illustration the change made by Mr. Quayle consists in substituting for the cast iron deflector plate over the fire door, a brick arch similar to the one at the other end of the box. The device was first applied to engines with grates having small air openings. With air openings having an area equal to one-third of the grate area, the combustion seemed greatly improved, a saving in fuel resulting which was estimated at from 5 to 7 miles to a ton of coal, all other conditions being the same. In engines with an air space of 50 per cent. of the total grate area, the only difference noticed was a considerable reduction in sparks carried through the tubes to the smoke-box and also a reduction of the



Brick Arch for Locomotive Fire-Box.—Chicago & Northwestern.

smoke from the stack. These results were confirmed by careful experiments under varying conditions.

The fire door used in these experiments has a "butterfly" damper, which, when open, has 16 square inches of opening. It was found that this admitted all the air that could be used without detriment to the combustion.

The device is giving very satisfactory results, and judging from the experiments thus far conducted, seems to consume the gases quite effectually saving coal as well as arresting the cinders which ordinarily would find their way to the smoke-box.

Sykes & O'Donnell's Signal Replacer.

The engravings shown herewith illustrate an "electric slot," or apparatus for throwing a semaphore arm to the danger position while the lever in the tower which operates it remains stationary. It was designed by Mr. J. P. O'Donnell and Mr. W. R. Sykes, Jr., of London, and it was referred to in the description of the lock and block apparatus of these inventors which appeared in the *Railroad Gazette* of June 22 last.

Figure 1 is a front elevation of the apparatus in the normal (danger) position, the signal being disengaged. Fig. 2 is a front elevation when the signal is engaged and in the all right position. Referring to fig. 1, *a* is a cast iron plate secured to the signal post and forming a guide for the up and down movement of the enclosing box *b* which is attached to the rod *c* connected to the signal arm, the slotted rod *d* being connected to the weighted lever at the foot of the signal post; *e* is an electro-magnet of which *f* is the armature; this armature is connected to the catch *g* and the click *h*; *i* is a lever pivoted at *k*, which is free to be engaged when in the normal position with the catch *g*, the pivot *k* being fast to the movable box *b*; the rod *l* is attached to the fixed plate *a* and is adjustable with regard to the position of the pin *m* in reference to the crank *n*, this crank *n* acts on a pin *o* on the hammer *p* pivoted at *q*, this pivot being fast to the moving box *b*; q^1 is a crank pivoted at *o*, and *s* is a spring to retain it in the position shown in fig. 1; *r* is a rod attached to the catch *g* and acted upon by the hammer *p*; the spring *t* is to prevent the hammer *p* striking the side of the moving box *b* and the spring *u* is to assist the lever *i* in returning to the normal position shown in fig. 1; *w* is a friction roller fixed in the end of the lever *i* and moving on the inclined top surface of the slotted rod *d*; *x* is the electrical connection with the block post in advance, and x^1 the connection to earth.

In the absence of the electric circuit being completed the movement of the operating lever will cause the slotted rod *d* to rise and thrust the lever *i* into the position shown by dotted lines in fig. 1, and consequently the movable box *b* will not be lifted nor will the signal arm be influenced. On the circuit being completed the armature *f* will be attracted by the electro-magnet *e*, the catch *g* will be raised so as to engage with the lever *i* and the click *h* will be moved to the position shown in fig. 2; on the operating lever being now actuated, the moving box *b* will be raised with the slotted rod *d*, and the signal arm, through the rod *c*, will be lowered to the safety position. The action of raising the box *b* will cause the projection *y* on the rod *l* to come in contact with the crank q^1, this will raise the hammer *p* and leave it in the position shown in fig. 2 held up by the click *h*. Supposing now before the operating lever is returned to the normal position, the circuit to be broken, either by the signalman in advance, or by the train passing over a treadle, with the wire circuit system; or entering the section in advance with the track circuit system; the armature *f* will fall so far as is allowed by the slot f^1 in the connection from the armature to the catch *g*; the click *h* will release the hammer *p* which in falling will strike the top of the rod *r* and so disengage the catch *g* from the lever *i*; the moving box *b* will then fall into its normal position, the lever *i* again taking up the position shown by the dotted lines in fig. 1. On the operating lever being returned to the normal position the lever *i* will resume the position shown by the firm lines in fig. 1 and be ready to be re-engaged by the making of the circuit from the block post in advance.

In the return movement of the box *b* to its normal position, the projection *y* will come in contact with the under side of the crank q^1 pushing it aside against the action of the spring *s* until the projection *y* has passed above the crank q^1 which will then resume its normal position. The pin *m* on the rod *l* will come in contact with the crank q^1

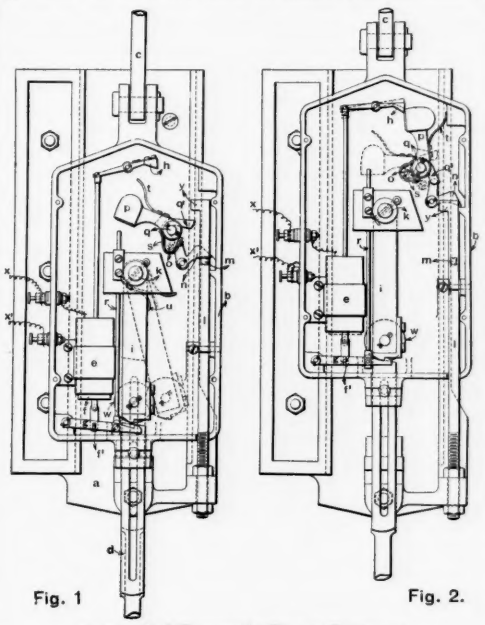


Fig. 1 Fig. 2.

Sykes & O'Donnell's Signal Replacer.

and this in contact with the pin *o* on the hammer *p* which will cause that hammer to resume the position shown in fig. 1.

Should the signalman who originally placed the signal to the safety position desire to return it to the normal "danger" position, he simply replaces his operating lever in the signal cabin. Generally, as long as the circuit is made with the apparatus in the position as shown in fig. 2, the operating lever in the cabin may be moved backward and forward any number of times, the connections to the arm being practically rigid.

Strike Disturbances.

The Southern Pacific strikers in California finally gave up their useless struggle on July 21 and most of them rushed to get their places back. Vice-President Towne issued a lenient order, promising to take back individuals who had not been law breakers, where there was work for them. This ending of the disturbance in California winds up the strike, but lawlessness has been reported from one point or another nearly every day during the past week. Near Butte, Mont., a considerable body of United States troops was gathered, the turbulence of the strikers in that region having continued. Three trestle bridges were burned by the strikers and considerable track was torn up. At Hammond, Ind., the state militia remained on duty at last accounts, the mobs in that place evincing a determination to make trouble whenever possible. A freight train of the Lake Shore & Michigan Southern was stopped by a mob of about 500 at Whiting, Ind., on the 19th, and pins were pulled and cars set afire, but the militia were on hand in season to disperse the rioters before much damage had been done. The employees of the packing houses at the stock yards in Chicago struck last week and business there was badly crippled. A fire in the yards on July 18 destroyed property worth $100,000, including two large buildings of Nelson Morris. The fire was doubtless incendiary.

Two men were arrested at Fort Wayne, Ind., for stoning passenger trains. At Brazil, Ind., a conductor on the Chicago & Eastern Illinois was badly beaten. On Saturday there were four small riots in Pullman. The Pullman Car Co. had resumed work in its laundry and was preparing to open the car shops, a hundred men being engaged in getting the machinery ready. The new employees were attacked where the military guard was weak.

United States troops were withdrawn from Chicago on Saturday. The Federal Grand Jury at Chicago found 29 additional indictments on July 19. On the 21st a number of directors of the American Railway Union and other strike leaders were arrested in Chicago and some of the men who had been in the riots of three weeks ago were arrested at Kensington and Burnside. The cases of 30 alleged rioters which were to have been tried last week were put over to July 28.

Sixty indictments, for interference with mails were found by the Federal Grand Jury at St. Paul. Fourteen strikers arrested at Raton early in July were imprisoned at Santa Fe, N. M, on Saturday last for terms varying from 15 to 50 days.

Work has been resumed in railroad shops at various places. At Kent, O., the New York, Lake Erie & Western shops were started July 19, but 35 men were discharged, including all known to belong to the American Railway Union. The shops of the Southern Pacific at Sacramento were opened on July 19 except the rolling mill and the foundry. The shops of the Atchison, Topeka & Santa Fe at Topeka resumed work on July 23 and those of the Chicago, Milwaukee & St. Paul at West Milwaukee on the same day. The Atlantic & Pacific shops at Albuquerque, N. M., have been closed on account of the loss of income due to the strike and those of the Union Pacific in Wyoming and Idaho will not be opened at present.

The Mobile & Ohio has ordered the discharge of all members of the American Railway Union, but with the intimation that they will be taken back if they withdraw from that Union. The United States Circuit Court at Nashville has sustained the action of the Receiver in reducing the wages of the employees of the East Tennessee, Virginia & Georgia.

On the withdrawal of the troops from the yards of the Lake Shore & Michigan Southern on Friday last, the men employed there refused to work except on the return of the troops, as they declared they would not risk personal violence, and could not trust the police. President Newell secured the return of Company C, Second Regiment, I. N. G., and the men resumed work.

In Montana where the troubles seem to have hung on more persistently than elsewhere, it was reported that a passenger train left Butte for the south on July 21 for the first time in 22 days. At St. Louis the American Railway Union formally declared the strike off on July 21.

There was much difficulty in starting the shops at Pullman, many men willing to work evidently being intimidated. The shops of the Allen Paper Car Wheel Co., which take their power from the Pullman shops, were started on Monday last, but there were not enough men to carry on work.

The trial of Messrs. Debs, Howard, Keliher and Rogers was begun at Chicago, July 23, before Judges Woods and Grosscup of the U. S. Federal Court, when the defendent filed their answer to the contempt rule issued by the court. The defense was represented by W. W. Erwin, of St. Paul, and S. S. Gregory and J. F. Geeting of Chicago; the Government by District Attorney Milchrist, Assistant District Attorney Hand and Special Counsel Edwin Walker. The answer of the defendants consists of a general denial, including the allegation that the officers of the association never sent or knew the contents of any of the telegrams produced before the grand jury and signed by Debs, with one exception. The case has been adjourned to September 2.

A Fast Thames-Boulogne Steamer.

The Fairfield Shipbuilding & Engine Co., has recently built for serivce between London and Boulogne a fine and fast excursion steamer La Marguérite. The guaranteed speed is 21 knots, say 24 miles. The vessel is 330 ft. long between perpendiculars, 40 ft. beam, 21 ft. 6 in. deep. In her speed trials with the engines running at 56 revolutions and developing over 8,000 indicated horse power, the mean speed was 21¼ knots.

RAILROAD GAZETTE

EDITORIAL ANNOUNCEMENT.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting, and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

The gross earnings for July are gradually coming in and of course make a very bad showing. Last week the *Chronicle* published a summary of 67 roads with a decrease of 30.39 per cent. for the first week of July, and for the second week of July 39 roads show a decrease of 18.93 per cent. None of the great Chicago roads were included in the returns of either of these two weeks. The returns of the Chicago, Milwaukee & St. Paul, which have been published since, show a loss in gross earnings of 51 per cent. for the first week and 41 for the second week. The Louisville, New Albany & Chicago lost 68 per cent. the first week of July and 44 the second week. In the month of June this road lost 23 per cent., and in May 20, and in the six months 19. The Chicago Great Western lost 41 per cent. in the second week. The Big Four lost 43 per cent. the first week and 37 the second, as compared with 14 per cent. in May, and 16 in June. The Burlington, Cedar Rapids & Northern lost 46 per cent. the first week in July. These examples will give some notion of what we are to expect when the returns from the Chicago roads are in; but of course the strike affected the railroads almost everywhere in the country, although with less intensity than in Chicago, except the California roads. The Denver & Rio Grande, for instance, lost 57 per cent. the first week in July, and 27 the second, against 27 per cent. in May and 35 in June. The Rio Grande Western lost 52 the first week and 35 the second. The Louisville & Nashville lost 32 per cent. the first week, 30 the second, 16 in May and 11 in June. The Atchison lost 60 per cent. the first week in July, and 45 the second, as compared with 25 in May, 34 in June and 13 in April. The Chicago & Eastern Illinois, which is not one of the great roads, is yet an important one, and gives some indication of the situation. This road lost 91 per cent. of its traffic the first week in July; that is, its earnings were $8,200, as against $93,600 the same week last year. Its losses, however, had been extremely heavy before the strike, having been 53 per cent. in May, the same in June and 31 per cent. for the half-year, it having been seriously affected by the coal strike. The bituminous coal roads begin to show improvement in spite of the strike. The Chesapeake & Ohio, for instance, lost 22 per cent. the first week in July, and 13 in the second, as compared with 34 in May and 23 in June. The Buffalo, Rochester & Pittsburg lost 28 per cent. the first week in July, it having lost 70 per cent. in May and 63 in June; and the second week in July it actually gained 3 per cent. The Norfolk & Western, which gained 10 per cent. in June over the preceding year, lost 13 per cent. the first week in July, but again gained 15 in the second week. The Wheeling & Lake Erie is still pretty badly off, apparently; it lost 52 per cent. in May, 54 in June, 10 the first week in July, and 67 the second week. Of course, the figures for July are still too scanty to be more than an indication of what we are to expect. It must be remembered that the World's Fair traffic did not do much for the railroads in July of last year. The passenger movement in that month was extremely disappointing, and the gross earnings for the whole month showed a loss of 4.11 per cent. from the preceding year, so we are not comparing with a prosperous month.

The net earnings for the month of May are summed up also in the last issue of the *Chronicle*, and are, of course, the worst ever reported. They show a decline of 33.79 per cent. for 141 roads, and for the five months to the end of May the losses are 20.45 per cent. for 140 roads. May of 1893 was only a fairly good month. The falling off for the month this year amounted to 56.29 per cent. for the southwestern group, 54.21 for the eastern and middle, and 42.12 for the trunk lines. The southern lines show a loss of only 16.52 per cent.

The railroad and financial world was shocked last week by the publication of the statement that Mr. Stephen Little, who has made an examination of the books of the Atchison, Topeka & Santa Fe at Chicago and Topeka, finds that during the four and a half years from July, 1889, to December, 1893, the published statements of the income of the road have been in the aggregate about $7,200,000 higher than the earnings actually were. It is stated by men well acquainted with the operations of the road, though not by Mr. Little, that the discrepancy has been caused by the payment of large rebates on freight bills, which rebates were neither charged to expenses nor deducted from gross earnings. It is also stated that this payment of large rebates was discontinued more than a year ago. This last statement, if correct, has an important bearing on the situation, for the most serious immediate result of the mis-statement of earnings would be its effect on the plans for reorganizing the finances of the company. Any rational plan of reorganization must be based on the probable amount that the road will earn, and this must be estimated by the actual amount that the road has earned. Our Chicago correspondent, however, gathers information from railroad men in that city going to show that perhaps the rebates are not so old as has been alleged. He says:

> The disclosure made regarding the payment of rebates on the Atchison is no news to those acquainted with the recent history of the road; but the inference that such rebates were illegally made in the ordinary acceptance of the term, would seem not to be warranted. It is said that a large portion of this amount was for actual overcharges due at the time the road was thrown into the hands of the receivers, and that the remainder was for unpaid balances due on contracts, which had been of long standing. That there is reason to believe that this is true is the fact that at the time it was proposed to advance western rates some months ago, the Atchison made a showing to the other lines of a large amount of these outstanding obligations which it was proposed to liquidate by reductions in charges on future traffic, and the other roads agreed that the Atchison might do this. It was the failure of one of the parties to the agreement to recognize this, that is said to have led to the break in rates which resulted in the formation of the new presidents' agreement. If this is true, while the management are likely to be condemned by the stockholders who are now out in the cold, there will be some who will be inclined to uphold the transaction as justified by the precarious situation which then existed, in view of the possible chance of pulling through. It is safe to say that if the road could have been tided over nothing would have been heard of the alleged rebates.

The illegality of the freight bills affected by the rebates may, indeed, be an open question. The freight may not have been interstate, or the officers may have justified themselves by any one of a hundred technicalities, which in rate manipulations are sufficient to keep the culprit out of the clutches of the sheriff; but the main indictment still stands—that the owners of the road's stock and bonds have been seriously deceived as to the value of their property. No one can make specific charges, for the floating debt, variously stated at from six to ten millions at the time the Receivers were appointed, last December, is the only account whose fluctuations would show the effect of the mis-statements concerning the earnings and no accurate statement of that has been given out.

The movement to reduce the rate on interchanged freight cars from 7½ mills to 5 mills a mile seems likely to be carried out successfully at an early day. The roads in the west are joining it rapidly, as appears from our Chicago correspondence, and the meeting of the Trunk lines in New York, which is to be held to-day, July 27, to vote on complying with the Western roads' request, is quite likely to take action looking to the adoption of the reduced rates in its own territory. A number of important roads have already expressed themselves in favor of the change. The subject has also been discussed by the New England roads, and the sentiment is reported to be favorable. They will probably act soon. This reform is in every way desirable. There are cases enough, to be sure, where 7½ mills is a low price for a car; but there are also plenty where 5 mills is high. Depending for justice, therefore, on the equalizing effects of thousands of movements, there is no objection, theoretically, to a rate even lower than the reasonable average rate, for each road should strive to borrow and lend equally. And the private-car evil is now so widespread that anything likely to assist in killing it out should be looked upon with favor even if it have some slight drawbacks. Interference with the wishes of roads that use private cars, and desire to continue using them, is, indeed, the only serious obstacle to the proposed change. But with the very great difficulty in making enough money to keep out of the almshouse that now presses upon the great majority of railroads, railroad officers who have a tender regard for the interests of the private car companies, may well question whether such regard does not interfere with their trusteeship to the stockholders of the railroad. To pay high rates on borrowed freight cars may easily degenerate into an injustice to the stockholders as palpable as to pay $30 a ton for rails when the market rate is only $25. There is no doubt that car contracts have thus been used practically to defraud.

The people of Boston, to whom the subject was referred by the Legislature, have voted upon the elevated railroad bill, and it is approved. The vote was 15,492 in favor and 14,214 against, leaving the narrow majority of 1,278. Neither the smallness of the majority nor the lightness of the vote can be deemed surprising, however, as the question was very much mixed, and those best qualified to judge doubted the expediency of the law in several respects. The bill provides for building elevated railroads in three or four different directions, so as to provide "rapid transit" lines to and from many suburban cities and villages, and, in fact, to reach all important points within six miles of the City Hall; but the probable amount of business to be obtained on any or all of these routes is very uncertain, and the question whether capitalists can be found who will wish to build the roads is as doubtful as the similar question in New York. As far as the simple question of volume of business is concerned, the aspect of the problem is probably much more discouraging than in New York. No one seems to know whether the promoters of the bill desire to build a railroad or only to speculate. But, besides the elevated scheme, the law authorizes an underground railroad from the old Boston & Maine station at Haymarket Square southward through the most thickly settled part of the city. This provision was added to the bill apparently for the purpose of making it acceptable to members of the Legislature who would have voted against the original Meigs Elevated project, presented by itself, and it seems to be regarded as the only feature sufficiently feasible to warrant definite expectations. A commission, partly appointed by the Mayor and partly by the Governor, is to have about $7,000,000 of public money to expend in building the subway, which is to be under Tremont street and the adjacent Common, and is also to build bridges across the Charles river. Within the subway and over the route to be taken, tracks may be laid by transportation companies, who are to pay rent to the city. The construction of elevated railroads in the crowded portions of Washington and Tremont streets is forbidden, and structures like "those in New York" are forbidden everywhere. For the elevated portions of the line, the Meigs plan is permitted, but not required; but *any* plan proposed must be approved by the State Railroad Commissioners.

The Value of Contracts with Railroad Employees

We learn that one of the Chicago societies for making the world over again has discovered the way to stop strikes. It has called a congress of employers and employed, something, it is explained, like the "World's Congress of Religions of the World's Columbian Exposition," where strikes will be talked to death. We suppose it will be a parliament, a place to *parler*, a talk shop, where a choice group of professors, ministers, editors, statesmen and labor chiefs will intoxicate themselves with the exuberance of their own verbosity. What a happy outcome if they could dissipate the strike spirit in thin air! We hardly believe they will, however, and meantime we may think a little of some other plans.

A couple of weeks ago a correspondent of the *Railroad Gazette* suggested the enlistment of railroad employees, somewhat as men are enlisted for the army. This has been for some years a pet notion with the *Evening Post* (New York), and it has merits. We may come to it sometime; but, like State ownership, it is still so far from possible that we shall have a good many years to talk about it before it comes.

Another plan is to make time contracts with the men and make them give bonds to keep their contracts. It is well known that a very large part of the railroad men are working under carefully drawn agreements, approved by their unions or brotherhoods, signed by the officers of the railroads, and very often by the officers of the unions, or representatives of the local organizations of the men. What part the men individually had in making these agreements is immaterial. They may have been hired before or after

the agreements were made, and may have joined the union before or after; but the agreements are union agreements, and the men who belong to the unions, and get the benefits of membership, must also take the responsibilities.

These agreements are very full and precise. They are the result of great experience, and of the sincere wish on both sides to establish a means of living and working together. The men are strong in their organizations and can drive hard bargains. Both parties to the agreements have an immense interest in their stability; therefore they are drawn with great care. The scale of wages is carefully fixed, taking into account all the complicated conditions of railroad service. The rights and remedies of the men are defined and guarded. We find, for instance, in some agreements, that "a committee of train men may call the attention of the train master or superintendent to the fact that there is "a surplus" of men employed, that is, that they cannot make full time. If they are obliged to change their homes they must have free transportation for their families and goods. Two brakemen must be promoted for one conductor hired; all employees are in line of promotion, with due regard to capacity, fidelity and length of service. Dismissal or suspension must be for cause, and appeal may be taken to a superior officer, and the employee may be present at the hearing, or represented by a "disinterested employee of his choice." Sometimes provision is made that an appeal shall be investigated by the superintendent and an employee of the same class as the one who appeals. It is the privilege and duty of an employee to make written appeal if he thinks injustice has been done in his promotion, reduction or assignment. A man discharged for drunkennness or insubordination is not entitled to a hearing; and men are not obliged to work with a man under the influence of liquor.

These are but a few specimens of the minute provisions of the contracts between the men and their employers. Finally, it is quite customary to provide for written notice from either side of a wish to end the agreement. It may be a "reasonable notice" or it may be a time notice of 30 or 60 days.

This is all quite as it should be, and we wish all editors who feel called upon to write on railroad strikes, and all ministers who feel called upon to preach about them, would take the trouble to read carefully a collection of these agreements. Then, instead of projecting a lot of conditions which do not exist they could discuss facts.

But these contracts between the men and the companies depend for their value on the good faith *and the legal responsibility* of both parties. The railroad companies are financially responsible, and are subject to suit at law, and, therefore, do not end the agreements without giving the prescribed "due notice." The men are not, as a rule, financially responsible, and so they often stop work in a body with absolute disregard of their contracts. This happened repeatedly in the last great strike. For instance, one railroad president issues a notice stating that members of the Order of Conductors, of the Brotherhood of Firemen, the Brotherhood of Trainmen, and the Switchmen's Mutual Aid Association, violated their contracts, which provided for 30 days' notice, and refused to work, while the members of the Brotherhood of Locomotive Engineers stood by their contract. The company, therefore, considers its contract with the other orders at an end, while that with the Brotherhood of Locomotive Engineers still exists. This is simply one instance of many that might be cited.

Such cases as this might be prevented by exacting bonds from the men when the contracts with them are made. Both parties would be then liable in money damages for breach of contract, and doubtless the plan is a first rate one if it can be made to work; but how far is it practicable? A large percentage of the engineers and conductors could give bonds; a large percentage of the brakemen and switchmen could not; and a very large percentage of the whole body of railroad employees would not give bonds except under severer stress than they have yet felt, or than the officers of the railroad companies are prepared to put upon them. Yet there is on all the railroads, especially in the east, a body of employees large enough to keep the road open, solid enough to get bondsmen or to put up cash bonds, and sensible enough to want permanence of employment. These men would doubtless often be ready to enter into *reciprocal* guarantees with the railroad companies, if they could be protected from violence and insult to themselves and their families, and from destruction of their property.

But there is one way of making the men keep their agreements which involves no revolution in existing ways of doing business, and which is, in fact, simply doing what the unions profess to do. That is, to to expel from a union every man who breaks an agreement such as we have described. When the terms of employment have been arranged between the railroad company on one hand, and the proper officers of the union on the other, and the men have taken service under these terms, and as members of the union, it is an act of bad faith not to expel them if they violate the terms. In fact, the union cannot afford to do anything else. That is the only condition on which it can remain a responsible and respectable body, worth treating with.

Still another plan for giving some permanence to an agreement with railroad men as to cost and terms of labor, was prepared by Mr. Meddaugh, General Solicitor of the Chicago & Grand Trunk, in a very able paper read at the Railroad Congress of the World's Fair. Very briefly stated it is to incorporate the unions, with officers legally liable and pecuniarily responsible, with power in the corporation to enforce penalties against members who violate agreements. With such a body valuable contracts could be made. We shall not give more space now to this plan, but the reader may find a synopsis of the paper in our issue of July 14, 1894, and it is printed in full in the volume of collected addresses at the Congress. Writing of the paper at the time of its publication we said: "While we are not as hopeful as Mr. Meddaugh appears to be of the rapid spread of knowledge of facts, and of correct opinion among the voters, and from them to the law makers, we have little doubt that he has pointed out the way in which relief will eventually come."

But while we are waiting for laws that may never be passed, and for revolutions which may never come, we can get along pretty well if the laws that we have are enforced. The labor leaders know very well that nine out of ten strikes would abort if men who want to work were protected from insult, beating and other forms of intimidation, and if the property of employers were protected from fire and wreck; so, of course, those who are honest must believe in assault and arson when committed by union men on the persons of "scabs" and the property of corporations. This is logical. But even scabs and corporations must be protected in life, liberty and the pursuit of happiness; or else we have anarchy. This is the great practical lesson of the latest strike, and if it is well learned we need not worry much about the future of labor. That will take care of itself. Protect every one in his person and property, and let the social forces work.

No Pooling Law This Year.

The bill to legalize pooling is dead, so far as the present session of Congress is concerned, the party managers of the House having decided that there will be no time available for its discussion. This probably means that the subject will lie buried until near the end of the next session, say about February, 1895. There is nothing to do but to let things drift, as they have been drifting for the last five years. Just now the dullness in business is so extreme, and railroad managers have been so engrossed with other affairs—reducing expenses or devising means to run trains in such places as Chicago—that *the* railroad problem, which, in the language of Judge Cooley, is the rate problem, is not particularly prominent; but it is as important as ever, and will reappear as soon as any active movement of traffic takes place. And it is as true now as ever that pooling or its equivalent is the only practical solution which is sure to have good effects in all parts of the conutry, and at one time as well as another. Other remedies, affecting local conditions, may amelioriate rate difficulties here and there, but this (with the other measures embraced in the Patterson bill) is the only one that is just now an appropriate subject for Congressional attention. But the exigencies of party politics overshadow everything else at Washington, and the business community must submit.

Meantime those who hope yet to see some good results from the careful work done by the Patterson committee, will note that a slight change has been made in this bill (H. R. 7273) since it was reported on May 31. As printed, the first section contained the provision (which has appeared in most of the proposals of this kind) making it the duty of the Commission to observe the working of pools and to investigate complaints relating to rates, practices, etc., maintained under the pool *or by any party thereto*, and when such rates, practices, etc., are found unreasonable the Commission shall order them to be changed. The alteration is in striking out the words we have italicized. This is evidently an attempt to weaken the power of the Commission by making the authority prescribed by the act more vague and indefinite. Furthermore, the words "upon traffic embraced therein," are put in place of those expunged, so that the authority to investigate would not apply to rates on other traffic than that subject to the pool. This also would be a material curtailment of the Commission's power, as, if the public ever suffers by the maintenance of a pool it is quite as likely to appear in excessive rates on unpooled freight, from non-competitive points, as upon that from competitive points.

The people in Philadelphia who have been complaining for several months that the export trade of their city is falling off in a very alarming way, and that the Interstate Commerce Law is responsible for their woes, have made this amendment to the Patterson bill the subject of another long report; and, as usual, they have induced the newspapers of that city to discuss the subject editorially. But, so far as we can see, their grievance is wholly imaginary. In fact, the *Record* tells them as much. It is doubtless true that the person who procured this change did it for the purpose of restricting the powers of the Interstate Commerce Commission; but, as every one knows, the 12th section of the Interstate Commerce Law gives the Commission the most sweeping powers of investigation, and no mere omission in any other section or law can weaken these powers. The first, second and third sections require all rates to be reasonable and just, and the 12th and following sections give the Commission every possible power, allowable under the constitution, to enforce the law, so that our Philadelphia friends need have no fear on this point. It may be true that the changing of the Patterson bill in this way might be used with some moral effect upon a jury, or even upon a judge, to show that Congress intended to tie the hands of the Commission, but when it comes to this we are discussing a phase of the subject which is likely to vary with the varying states of public sentiment; and the status of the Interstate Commerce Commission, as far as it depends upon what kind of an estimate people place upon its abilities or its trustworthiness, will never be either helped or harmed by such a mere detail as this.

June Accidents.

Our record of train accidents in June, given in this number, includes 39 collisions, 67 derailments and 4 other accidents, a total of 110 accidents, in which 36 persons were killed and 94 injured. The detailed list printed on another page contains accounts only of the more important of these accidents. All which caused no deaths or injuries to persons are omitted, except where the circumstances of the accident as reported make it of special interest.

These accidents are classified as follows:

COLLISIONS:	Rear.	But-ting.	Crossing and other.	Total.
Trains breaking in two	1	0	0	1
Misplaced switch	2	0	0	2
Failure to give or observe signal	2	1	0	3
Mistake in giving or understanding orders	0	3	0	3
Miscellaneous	4	2	6	12
Unexplained	7	7	4	18
Total	16	13	10	39

DERAILMENTS:			
Broken rail	1	Careless running	5
Loose or spread rail	1	Bad loading	1
Defective bridge	3	Animals on track	2
Defective switch	4	Landslide	2
Bad track	1	Wind	1
Broken wheel	2	Malicious obstruction	5
Broken axle	6	Accidental obstruction	2
Broken truck	3	Maliciously misplaced switch	3
Loose wheel	1	Unexplained	19
Failure of drawbar	2		—
Broken car	1		67
Misplaced switch	2		

OTHER ACCIDENTS:	
Boiler explosion	1
Broken side rod	1
Various breakages of rolling stock	1
Other causes	1
	— 4
Total number of accidents	110

A general classification shows:

	Col-lisions.	Derail-ments.	Other acc'd'ts.	Total.	p.c.
Defects of road	0	10	0	10	10
Defects of equipment	1	15	3	19	17
Negligence in operating	20	8	0	28	25
Unforeseen obstructions	0	15	1	16	15
Unexplained	18	19	0	37	33
Total	39	67	4	110	100

The number of trains involved is as follows:

	Col-lisions.	Derail-ments.	Other acc'd'ts.	Total.
Passenger	15	18	2	35
Freight and other	66	49	2	117
Total	81	67	4	152

The casualties may be divided as follows:

KILLED:	Col-lisons.	Derail-ments.	Other acc'd'ts.	Total.
Employees	8	11	3	22
Passengers	0	0	0	0
Others	9	5	0	14
Total	17	16	3	36
INJURED:				
Employees	40	34	0	74
Passengers	2	7	5	14
Others	1	5	0	6
Total	43	46	5	94

The casualties to passengers and employees, when divided according to classes of causes, appear as follows:

	Pass. killed.	Pass. injured.	Emp. killed.	Emp. injured.
Defects of road	0	3	2	7
Defects of equipment	0	4	4	3
Negligence in operating	0	2	8	41
Unforeseen obstructions and maliciousness	0	5	4	6
Unexplained	0	0	4	17
Total	0	14	22	74

Twenty-one accidents caused the death of one or more persons each, and twenty-six caused injury, but not death, leaving 63 (57 per cent. of the whole) which caused no personal injury deemed worthy of record.

The comparison with June of the previous five years shows:

	1894.	1893.	1892.	1891.	1890.	1889.
Collisions	39	72	75	50	64	53
Derailments	67	96	88	109	67	42
Other accidents	4	5	2	8	6	4
Total "	110	173	165	167	137	79
Employees killed	22	25	44	50	41	18
Others "	14	15	26	10	17	17
Employees injured	74	104	143	130	98	49
Others "	20	96	156	107	155	53
Passenger trains involved	35	55	77	58	65	36
Average per day:						
Accidents	3.66	5.77	5.50	5.57	4.57	2.63
Killed	1.20	1.33	2.53	2.00	1.93	1.17
Injured	3.13	6.67	9.97	7.90	8.43	3.40
Average per accident:						
Killed	0.327	0.231	0.424	0.359	0.423	0.413
Injured	0.854	1.156	1.812	1.419	1.847	1.291

We find no account of any train accident in June in which a passenger was killed. There were two accidents to passenger trains running at high speed, one the derailment at Pocahontas, Ill., on the 9th, and one near Reading, Pa., on the 28th, but the number of persons badly injured seems to have been small in both cases. Of the injured whom we have classed as passengers, four were in a freight car, taking care of horses (at Stillman Valley, Ill., on the 19th). This accident was due to the pulling out of a drawbar, the key in the tail bolt having dropped out. This is a kind of accident that seems to be increasing, thirteen cases having appeared in our records during the last four months. Adding to these the collision from trains breaking apart (21) we have 44 drawbar or coupler failures, to which must be added probably many more which did some slight damage. What portion of these defective drawbars are of the M. C. B. pattern we do not know, but as the derailments from bars dropping upon the track increase much faster than the collisions from these failures it is fair to assume that *large-sized* drawbars are prominent among the failures. Old-fashioned drawbars which fall to the ground often lie so as to do no damage to the cars that pass over them. And as M. C. B. bars are larger than most of the older ones it is doubtless fair to place most of the guilt upon them. One thing, however, is quite certain, and that is that the M. C. B. couplers which do pull out are almost invariably those attached by a spindle. We have made considerable inquiry but hear of no trouble with those having the yoke attachment. The replacement of spindles by yokes, already begun and well carried forward by some roads, should therefore be made the policy of all roads.

Although the record of passenger casualties was light, the total number of persons killed in June was 36 and no less than 14 of these were trespassers on freight trains. None of these were Coxeyites, so far as appears from the accounts, so that people who think that ride-stealing on a large scale is a temporary fad may note this fact as a bit of evidence to the contrary.

According to the press despatches a freight train was wrecked at Round Pond, Okla., on the 6th, where rails had been taken up by the citizens who had a quarrel with the railroad company, but according to the accounts the engineman did not stop, when he knew there was danger ahead, and the occurrence therefore cannot be classed as an accident. The fatalities attending the derailment of a freight train by a landslide at Sloane, Col., on the 9th must also be omitted from our record, as the trainmen (two of them) were killed by a landslide which occurred some time after the train had been stopped.

Two persons were killed by the derailment of a logging train at Red Bluff, Cal., on the 14th, and two by a collision in the Woodward Iron Company's yard at Woodward, Ala., on the 9th. In the latter case the victims appear to have been passengers, although this railroad does not appear in the lists as a common carrier. Injuries to passengers in accidents to electric street cars were reported from a half dozen different places, and in most of them several of the injuries were quite serious, though none were fatal. Among these there were collisions at Lancaster, Pa., Atlanta, Ga., Meriden, Conn., and Norwalk, Conn., and a derailment at Columbia, Pa. At Paterson, N. J., on the 18th, an electric street car was struck by a passenger train, injuring seven pasengers in the street car, three of them badly; and in Chicago, on the 25th, an electric street car ran into a freight train of the Chicago & Eastern Illinois, injuring two persons. A passenger train of the Chesapeake, Ohio & Southwestern killed four persons in a carriage on a crossing near McHenry, Ky., on the afternoon of June 23.

Although no passengers were killed in the United States in June we find one case in Canada. A passenger train of the Canadian Pacific fell through a trestle bridge which had been burned near Ft. William. One passenger and the express messenger were drowned. On the Salisbury & Harvey Railroad near Albert, N. B., on the 29th, a whole passenger train fell through a bridge into the river 40 feet below, but there must have been but few persons aboard as only six injuries were reported.

A new art is being developed in the United States with considerable rapidity, the art of making heavy armor. But apparently no one, however experienced or well informed he may be, knows yet what are the limits of thickness or of treatment. Last May an 18-inch armor plate was destroyed at the Indian Head proving ground by a single shot from a 12-inch rifle, the plate breaking into three pieces. The plate was of unequal section, that is, it was 15 ft. 11 in. long, 7½ ft. wide and 18 in. thick from the top down for 43 inches where it began to taper and at the bottom was only 8 inches thick. The destruction was so complete and so unexpected that it at once started the question if it was possible to get reliable results from Harveyized plates of such thickness and especially of unequal section. It was found on examination that this plate contained a very fine internal crack communicating with the surface somewhere, but so fine that it could not be discovered in inspection. The evidence that it had communicated with the surface was found in the fact that there was oil in this crack which must have got in in the process of oil tempering. The next step was the trial of a 17-inch plate which was attacked by the same gun; that is, a 12-inch rifle with a Carpenter projectile weighing 850 lbs. The first shot, with a velocity of 1,410 ft. and a striking energy of 14,800 ft.-tons penetrated six inches and did not crack or bulge the plate. The projectile was broken up. The second shot, with velocity of 1,858 ft., and a striking energy of 21,300 foot tons penetrated 10 inches. The point of the shell was welded in the plate and the body of it was completely demolished. A fine crack was developed extending from the shot hole to one edge of the plate, but it did not open and the plate was accepted. So the doctors were at sea again. Was the limit of reliable Harveyizing at 17 inches, or above it or below? The next step was the attack of another Harveyized 17-inch plate with the same gun and projectile. The plate was pierced like a cheese. Finally came the trial, last Friday, of an 18-inch plate similar to that demolished in May with the same gun; that is, it was 18 inches thick for the upper 43 inches of its width and tapered to eight inches at its lower edge. The first shot was with a Carpenter projectile weighing 850 lbs. with a striking velocity of 1,465 feet and a striking energy of 12,666 foot-tons. The shot penetrated about eight inches, the point was welded into the plate and the body broken. No cracks were developed and the plate was not at all distorted. The next shot was a similar projectile with 397½ lbs. of powder, a striking velocity of 1,926 feet and an energy of 21,880 foot-tons. The point of this shot was also broken off and welded into the plate. It penetrated about nine inches and cracked the plate, but as it did not get through the plate was accepted. So the question is still open as to how reliable Harveyizing is with very thick plates of irregular section.

It is to be hoped that the failure of the American Railway Union in its attempt to build itself up on the "ruins" into which it expected to transform the older brotherhoods, will infuse new spirit into the better men of the latter. The utter absurdity of the methods recently employed, tends to show up, by contrast, the merit of rational methods. There are evidences of improvement already. About 400 enginemen on the Wabash struck with the Debs crowd and are now out of work; but Mr. Arthur gives them only the cold consolation that the rules of the brotherhood gave them full warning of the consequences of their action. He says:

"The engineers on the Wabash struck without the sanction and in clear violation of the laws of the Brotherhood of Locomotive Engineers. Under these conditions any member of our order has the full right to take a place vacated by a striking engineer. I have received many inquiries from engineers out of employment asking if they would be permitted to take positions on roads where our members had gone out in sympathy with the A. R. U. movement. I have not sent nor advised a single engineer to take a striker's place on the Wabash, but have simply quoted the rules to them and said they were at full liberty to take places of engineers who had gone out on roads where a strike had not been ordered by a vote of the Brotherhood or grand chief engineer."

Other brotherhood leaders have spoken with similar firmness, though, we are sorry to say, their courage came rather late, in most cases. The leaders of the American Railway Union, from their retreat in the Chicago jail, have issued another statement to the public urging the people not to patronize Pullman cars. Among the statements which they make to bolster up their cause is one to the effect that the older brotherhoods are being weakened by the prosperity of the American Railway Union, and they name several lodges of the brotherhood of locomotive engineers which they say have disbanded. But we have seen nothing in any other press dispatches to this effect, and it is probable that if any engineers have disbanded it is those on the Wabash, referred to above, who are out of jobs.

A vote has been taken in the lower house of Congress which shows a majority of that body to be in favor of the state authorities and against the action of the United States courts in the tax controversy in South Carolina. The vote was on the bill reported from the judiciary committee fixing the status of state and municipal taxation on property in the hands of receivers appointed by the United States courts. The bill provides that taxes heretofore or hereafter assessed by state, county, or municipal authority against any corporation or corporate property, shall not be classed as debts to be passed upon in the first instance by any court of the United States, but shall be collectible in the first instance by the proper authorities according to the assessment, whether the corporation is in the hands of a receiver or not; and no judge or court of the United States shall have any other or greater authority to enjoin, restrain, or interfere with the collection than if no receivership existed; and the seizure, as well as the sale of property for taxes shall divest the receiver, and court of control. Two years ago, acting on the advice of judges of the courts controlling the receiverships, certain South Carolina railroads refused to pay the full amount of taxes levied by the state commissioners, holding the appraisal of the property to be excessive, but tendered the amount which the judges held to be fair. Three State constables who attempted to enforce collection ordered by the state board were fined $500 each for contempt of court. The state paid their fines and recently the House judiciary committee reported a bill to refund the amount, $1,500, to the state.

The Paris, Lyons & Mediterranean Railroad has established "telegraph boards" at the principal stations, on which dispatches for passengers or for persons awaiting the arrival of passengers are posted. A traveler who misses a train can telegraph in the care of the station master, to the person awaiting his arrival at his destination. An American newspaper, quoting this item, says the idea should be copied here. A railroad certainly ought to provide such boards if passengers will use them sufficiently to give them a decent standing as a convenience, but if the "board" were to be as useless and were to become, from lack of care, such a marked disfigurement to the waiting rooms as some other alleged conveniences are—interstate tariffs for instance—it would be much better never to put it up. But if every station in the country were provided with boards to-day it would take several months or years for people generally to "catch on" to the innovation so that one could send a message in care of the board with the hope that his correspondent would think to look at the board, and we would therefore suggest to any manager who thinks of trying the scheme that he get a number of other roads to join him and that he prepare for a long campaign of education.

The effect of the strike upon values of the stocks of the railroads affected, was singularly slight. The average decline of 10 stocks from June 17 to July 17 was 1.05 per cent. Granting that this was caused solely by the strike, the depreciation in values, figured at only 1 per cent., on the total capitalization of these various roads would be heavy. However, the strike was but one of the factors operative. The continuation of business stagnation through tariff delay was also a potent influence.

	July 17.	June 17.	Changes.	
Atchison	5¾	7	declined	1¼
Burlington	75⅝	77½	"	1⅞
Denver, preferred	27¼	28⅜	"	1⅛
Lake Shore	130	131¼	"	1¼
Missouri Pacific	27	28⅛	"	1⅛
New York Central	98½	97¼	advanced	1¼
Northwestern	105	106	declined	1
Rock Island	67½	68⅝	"	1⅛
St. Paul	60	60⅛	"	⅛
Wabash, preferred	14¼	15⅜	"	1⅛

Average decline, 1.05.

The Rail Trade.

Poor as was last year for the rail mills, this year is even worse. During the first six months of 1893, the rail shipments were 571,884 tons, while the sales aggregated 745,191 tons. During the first half of the current year the total deliveries were only 340,000 tons and the total sales 502,000 tons. Last year the three Western mills, counting Cambria among them, shipped 323,314 tons. This year their total is only 181,000 tons, and curiously the two largest delivered practically the same quantity, 85,000 tons, while their sales were nearly alike, 145,000 and 140,000. The largest business was done by the Lackawanna Company, which took orders aggregating 156,000 tons and shipped over 120,000 tons.

When it is considered that the normal renewal demand of the railroads of this country must be 900,000 to 1,000,000 tons annually, the restriction in the requirements this year will be appreciated. It is a fact, too, that so far as the East is concerned, the requirements for this year have been pretty well covered, and that the natural territory of the Eastern mills will furnish very little more work this year. The situation is probably better in the West. Yet one great Southwestern system which has a contract for 50,000 tons with a Western mill has not yet drawn upon it at all.—*The Iron Age.*

TECHNICAL.

Manufacturing and Business.

A report has been filed in the County Court at Chicago by William K. Ackerman and James H. Wilson, assignees of the Grant Locomotive Works, covering a period from June 6, 1893. The receipts are given as $47,381, and the disbursements $46,745. The report says that it has been impossible to sell the plant and the creditors are opposed to selling until business improves.

The Continental Palace Car Co., briefly referred to last week, secured a charter in Illinois on July 19. The capital stock is given as $5,000,000, but no details can be obtained as to the organization of the company except that it appears that no one outside of St. Louis or East St. Louis is interested in the new company. The incorporators are W. A. Bates, J. T. McCasland, M. M. Greenwood, Jr., R. J. Whiting and Jacob Scherer.

The Youngstown Bridge Co. has the contract for the steel and iron work for the buildings of the Northwestern Iron & Steel Co.'s rolling mills at Tacoma, Wash.

The Perfection Nut Lock Co. of Fordyce, Ark., has filed articles of incorporation in Arkansas. The capital stock of the company will be $100,000.

The Fox Solid Pressed Steel Co., of Joliet, Ill., has received an order from the Delaware, Lackawanna & West-

ern railroad for 4,000 pressed steel trucks, to be used on coal cars.

The Shiffler Bridge Co., of Pittsburgh, Pa., is engaged on contracts for the following buildings: a rolling mill 292 ft. x 142 ft. for the Logan Iron & Steel Co. of Burnham, Pa. Wheel shop, machine shop and producer and boiler house for the Standard Steel Works, of Burnham, Pa.; and for an extension to the open hearth building of the Lukens Iron & Steel Co., of Coatesville, Pa., which will be 100 x 105 ft. The Malleable Iron Works, to be operated in connection with the Whitely Implement factory, at Muncie, Ind., have been completed. When they are put in operation the old plant at Springfield, Ohio, will be closed.

The Kansas City Car & Iron Works have purchased 14 acres of land in Armourdale, a suburb of Kansas City, Mo., and will begin at once to erect a plant.

The new plant of the Westinghouse Electric & Mfg. Co., now in course of erection at Brinton, Pa., near Pittsburgh, will be formally dedicated early in September.

A locomotive coaling station for the trains entering the Boston station of the Boston & Maine Railroad is being constructed at Austin street, Boston. The storage pocket is very large and has a capacity in round numbers of about 45,000 tons. The coal is distributed in this building by the C. W. Hunt Company's system of cable railroad.

The Young Reversible Lock Nut Co. was incorporated in New York this week. The capital stock is $500,000, and the directors are: Levi H. Young, P. Lorillard Ronalds, Jr., Frederick J. Lancaster and Frank M. Larcher, of New York city, and Chas. D. Pearce, of Brooklyn.

Iron and Steel.

Chauncey Black, of Pennsylvania, and associates have bought the North Carolina Steel & Iron Co.'s plant at Greensboro, N. C., and will complete and operate the plant, which is a large one, and will hereafter be known as the Greensboro Iron & Steel Co. Its ore will principally be from the mines of Chatham, Persia, Orange and Stokes counties, North Carolina.

The Illinois Steel Company's Bay View works, at Milwaukee, which were shut down on account of the strike have resumed operations.

Two more blast furnaces of the Cambria Iron Co., were fired up last week, and an attempt will be made to keep the plant running steadily.

Two hundred men employed in the steel department of the Sligo Iron & Steel Works, at Pittsburgh, Pa., struck on July 20. The employees demanded the restoration of the $4 rate, while the company refuses to pay more than $3.60 a ton.

After a shut-down of nine weeks for want of bituminous coal, the open hearth department in the ordnance works of the Bethlehem Iron Co. has resumed. Every portion of the large plant is now in operation, about 3,000 men being employed.

The York Rolling Mill, of York, Pa., which shut down six weeks ago on account of the scarcity of coal, resumed operations on July 23, giving employment to 300 men.

E. B. Morris, Chairman of the Reorganization Committee of the Pennsylvania and the Maryland Steel Companies announces that the plan of reorganization had been agreed upon. Over 90 per cent. of the creditors have assented to the plan, and a sufficient amount of preferred stock has been subscribed to warrant the committee in declaring the plan for judicial sale to be effective. The time for subscription by all stockholders to the new preferred stock has been extended until October. The company will be reorganized for the benefit of the creditors and subscribers to the new preferred stock to the amount of $1,500,000 only.

New Stations and Shops.

There is some talk of the Kansas City, Fort Scott & Memphis Railroad removing its division machine shops at Thayer, Mo., to some other point on the line, probably Mammoth Springs, Ark.

The contract for building the foundation work of the new station of the New York Central & Hudson River road at Syracuse, N. Y., has been let to James Stewart & Co., of Buffalo. This firm also has the contract for the office structure, but not for the station building proper. The work on the foundation is to begin this month and will include considerable heavy piling work as well as the building of a heavy stone retaining wall. The station will hardly be ready for use before next spring. The contract for the erection of the train shed has been given to the Buffalo Bridge & Iron Works.

The Berlin Iron Bridge Co., has received the contract from M. C. Henry & Co., of New York, to cover their stone-yard with an iron roof, the building to be 50 ft. x 100 ft. and also for a traveling crane.

The plans for the proposed shops of the Cincinnati, Chicago & Mackinaw at Van Wert, O., have been completed but it has not yet been decided when the erection of the buildings will begin.

The Berlin Iron Bridge Co., of East Berlin, Conn., has received the contract from the Delaware, Lackawanna & Western Railroad for one of its patent anti-condensation corrugated iron roofs, to cover the new engine room at the Auchincloss Shaft. This is the third roof of this kind that the Delaware, Lackawanna & Western Railroad has ordered from the Berlin Company.

An extension 40 ft. x 60 ft. will be added to the Bloomsburg Mfg. Co.'s plant at Bloomsburg, Pa.

The Lehigh Transportation Co., controlled by the Lehigh Valley Railroad, will erect at West Superior, Wis., two iron and steel buildings, 100 ft. high, for a coal storage plant. Each building will have a storage capacity of 150,000 tons of coal, and one will be used for anthracite coal and the other for bituminous coal.

The Standard Paint Company Decision.

In view of the large use of waterproof insulating papers in refrigerator cars, cold storage buildings, etc., car builders and others will undoubtedly be interested in the decision rendered on the 5th inst. by the United States Court for the district of New Jersey, establishing the validity of the United States patent, under which the Standard Paint Company manufactures its paper, known commonly to the trade as the "P. & B." waterproof paper. The decision is a broad one, closing the litigation of over four years' duration of the Standard Paint Company vs. W. J. Bird and James L. Reynolds. By the terms of the decision it is adjudged that the assignors of the Standard Paint Company were the first to produce a paper coated with the solid residuum of petroleum combining the characteristics of an odorous water, acid, alkali and air-proof paper. The Court grants a permanent injunction against the defendants in the action and directs an accounting by reason of the infringement. The manufacturers state that having obtained an injunction in the courts they will, of course, seek to fully protect their rights, and in a circular letter, giving the gist of the decision of the Court, caution the trade to that effect; they further state that they shall continue to offer the various grades of the "P. & B." paper at the same prices as before.

Electric Cars to Use Pintsch Gas.

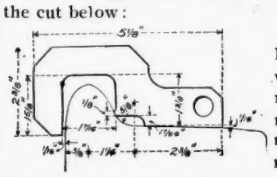
The Columbus Central Railway Company, of Columbus, O., has closed a contract for the construction of Pintsch works to equip and light its street cars with this light. This is an electric trolley road and the Pintsch light is used because of its more steady and reliable illumination, and it is estimated will cost but half as much as electric light from the power current.

M. C. B. Circular on Wheel Flanges.

The Secretary of the Master Car Builders' Association has addressed the following circular to makers of cast iron and steel tired wheels:

"At the last Convention of the Master Car Buliders' Association, I was instructed to request all cast iron wheel manufacturers to designate the month and the year manufactured on the inside plate of all cast iron wheels manufactured after August 31 proximo, in letters and figures at least 1¼ inches high.

"I was further directed to request all wheel manufacturers to observe the maximum flange thickness, which requires that the gage shown herewith should go down over the flange, and necessitates that flanges should not be more than $1\frac{7}{16}$ inches thick when measured as shown in the cut below:



"Will you kindly acknowledge receipt and say whether the patterns or rolls you now use will meet this requirement of maximum flange thickness, and if not whether there are any reasons why you cannot change them so as to do so?

"The rules of interchange, which go into effect September 1 proximo, require that flanges shall not be thicker than shown by this gage on all wheels made after August 31, 1894."

THE SCRAP HEAP.

Notes.

Mr. Wilson, of the State of Washington, has introduced in Congress a bill for the purchase of all the railroad and telegraph lines by the Government.

Six workmen were killed by a cave-in at the tunnel of the Knoxville, Cumberland Gap & Louisville Railroad near Middlesborough, Ky., last week.

A press dispatch of July 20 reported another railroad bridge burned at Enid, Okla. United States troops were guarding the lines of the Chicago, Rock Island & Pacific as thoroughly as possible.

Forest fires have been destroying a large amount of lumber and timber land in McKeon and Wyoming counties, Pa., along the lines of the Harvey's Lake branch of the Lehigh Valley and Western New York & Pennsylvania.

A press dispatch from Reading, Pa., last week, stated that the Trainmen's Brotherhood in that city had been disbanded as a result of the action of the officers of the Philadelphia & Reading in discharging employees who belonged to it.

The Switchmen's Mutual Aid Association is winding up its affairs on account of a cash deficiency of $32,000. This is said to be due to mismanagement of the Treasurer, who disappeared a month ago. Mr. Debs, however, seems to assume that the breaking up of the Switchmen's Association has been caused by a secession of members to join his Union.

At East Rahway, N. J., last Saturday, a man picked up insensible on the track of the Pennsylvania Railroad said he had been beaten and robbed by tramps in a freight car on a train in which he had been riding. Residents in Rahway say that fifty or more tramps ride through that place every day on the freight trains of the Pennsylvania Railroad.

The annual report of Superintendent R. C. Jackson, of the Second Division of the Railway Mail Service, shows that his men handled 1,200 million pieces of mail matter during the last fiscal year, an increase of about five per cent. over the previous year. The number of errors was only one to each 15,972 pieces, a considerably better showing than that for the previous year.

Doormen on the Western division of the New York Central have been instructed to allow no person to enter the train sheds while the Empire State Express, North Shore Limited, or New York & Chicago Limited are there, unless they have tickets entitling them to transportation on those trains, and the porters and trainmen have strict orders to be on duty at the end of each car and keep off all who are not entitled to transportation. People who go on board simply to greet a friend are unable to get off after the train starts, because the cars are equipped with folding steps, and these are put up as soon as the order "All aboard" is given. As these trains stop at only the principal stations, such persons are likely to be carried off 75 or 100 miles. The involuntary passenger invariably refuses to pay fare when caught this way and there is no alternative but to carry him deadhead to the first stopping place.—*Buffalo Courier.*

The grade crossing problem in Buffalo, N. Y., appears to have once more reached a stage where the reporters can *almost* say that something will be done. The contract between the Commissioners and the New York Central is said now to be agreed to by both sides, so that it will be signed at once and work begun within 60 days. While this settlement leaves the complicated matters connected with the Lake Shore and other roads on the south side of the city still unsettled, still it provides for important improvements, as the lines of the New York Central and of the West Shore, which it controls, are so situated that the grades can be changed for long distances without affecting the other railroads of the city.

The plant of the Columbian Iron Works at Baltimore, Md., builders of the warships Detroit and Montgomery, was damaged by fire on July 18 to the extent of about $80,000.

In appreciation of the services of the soldiers of the regular army, the Chicago & Northwestern Railway has broken ground for a new stone station at Fort Sheridan, near Chicago, and arrangements have already been made to stop a number of suburban trains at the fort. The station heretofore known as Fort Sheridan, situated a mile from the reservation, will now be known as Highwood.

Near Sioux City, Ia., one day last week, a freight train of the Sioux City & Pacific was boarded by a gang of 105 tramps who ran things to suit themselves for some time. A passenger train of the Atchison, Topeka & Santa Fe was held up by two masked men near Red Oak, I. T., on July 21. The express car was robbed.

The Pacific Railroad's Committee of the Lower House of Congress has made a favorable report on the Reilly bill for the adjustment of the indebtedness of the Pacific railroads to the Government. The bill differs from those previously proposed chiefly in a clause requiring the companies to pay off their first mortgage bonds, which hold a lien prior to that of the Government, so as to give the Government a first lien on the property. The report on the bill states that the terminal properties of the Union Pacific at the principal cities on the line are worth $15,000,000.

The Cartagena Railroad.

Cartagena-Magdalena Railroad, in Columbia, has been opened to traffic. The railroad extends from Cartagena, a distance of 60 miles, to the town of Calamar, on the Magdalena river, 80 miles, above its entrance into the Caribbean Sea. The railroad was described in the *Railroad Gazette* of April 13, 1894, and in other issues.

Power House for the Baltimore Belt Tunnel.

The Baltimore & Ohio Railroad Co. has secured a permit to build a power-house in South Baltimore to furnish power for the Baltimore Belt tunnel. The building will be 69 ft. x 300 ft. The power-house will be at the south end of the Belt tunnel on South Howard street, between Montgomery and Henrietta streets. The first story will be stone and the remainder of red brick, while the roof will be of corrugated iron, with iron pillars supporting the several floors. The electrical equipment for the power-house will be furnished by the Thomson-Houston Co. There will be dynamos and engines with a capacity of 12,000 h. p. J. J. Walsh & Son are contractors for the power-house.

Lake Notes.

Cargo lumber shipments from the head of Lake Superior for the season to date have been 65,000,000 ft., all of which, except a few loads, has gone to Lake Erie. This week's shipments were, 13,000,000 ft. Duluth lumber manufacturers who have an eastern trade have sold of this year's cut, in cargoes, about 40,000,000 ft. The market is constantly improving. Of the cargoes of the past week two were consigned direct to Cuba. Lumber freights from Duluth to Buffalo, 1,000 miles, are now $1.50 per thousand feet, while the rates by rail to St. Paul, 150 miles, are equal to $1.60 per thousand. Duluth rates to Buffalo are now less than from Saginaw to the same port, about half the distance.

As instancing the depression in coal and other freights on the lakes may be given facts regarding a late cargo. A vessel arrived in Duluth with 2,300 tons of hard coal aboard. On discharging cargo and buying fuel for the return trip at the same dock the vessel's master found the fuel company in his net debt just 56 cents. He had received 15 cents a ton for his coal freight.

The Mountain Iron mine, of the Rockefeller syndicate, on the Mesaba range, is now shipping more ore than any other mine in the world. Last week it averaged nearly 8,000 tons per day.

The Minnesota Iron Company is shipping a higher grade of ore than ever before, its deep workings apparently furnishing an ore practically pure. It is now shipping cargoes as high as 68.5 metallic iron, equal to about 98 per cent. oxide of iron. On the ninth level an ore body 90 ft. wide and 500 ft. long of this quality is being opened.

For this year to date Lake Superior customs districts have shipped iron ore as follows: Duluth, 1,200,000 tons, Ashland, 730,000 tons, Marquette, 500,000 tons. Escanaba on Lake Michigan has in the same time shipped about 600,000 tons. This is an increase over last year at all ports but the last.

Serious Collision at Atlanta, Tex.

A press dispatch of July 24 reports a butting collision on the Texas & Pacific between a passenger train and a freight a few miles north of Atlanta, Tex., wrecking the cars of the passenger train badly and killing eight persons, three of whom were postal clerks and one a passenger.

The Chignecto Ship Railroad.

The recent negotiations in England to raise funds to complete the Chignecto ship railroad project which promised to be successful, have come to nothing through the failure of the projectors to secure the consent of the Canadian Government to extend the company's charter and the time for completing the works. The Dominion Parliament has been adjourned, without any action on the matter, the Government having failed to introduce any resolution on the subject. Chief Engineer Ketcham, now in London, sent a dispatch last week announcing that $1,500,000 to complete the work had been guaranteed by English capitalists, provided the Government of Canada would extend the time to open the railroad. The subsidy guaranteed was $170,000 a year for 20 years which is now forfeited.

LOCOMOTIVE BUILDING.

The Rogers Locomotive Co. of Paterson, N. J., has built for the Cardenas & Jucaro Railroad of Cuba two locomotives, which will be shipped about Aug. 1. The Rogers Co. is also building 12 other locomotives to be shipped to Cuba for another railroad line there.

The Pennsylvania Railroad will not build more than 100 locomotives at its shops at Altoona and Juniata, Pa., during the present year. Usually over 225 locomotives are built by the Pennsylvania Railroad at its shops every year.

CAR BUILDING.

The Lehigh Valley car order which has been referred to in this column several times was distributed between four car building firms instead of two, as previously stated. The Buffalo Manufacturing Co. has 1,000 cars and the other 1,000 were awarded to the firm of J. W. Hoffman & Co., of Philadelphia, and 450 of the cars will be built by the Lebanon Manufacturing Co., 300 by the Carlisle Manufacturing Co., and 250 by the Middletown Car Works, all of Pennsylvania.

The Michigan-Peninsular Car Co. is now employing about 600 men at its Detroit shops, more than half of this force having been taken on within the last week or two. It is thought that the Peninsular Car Works will also be started up soon, and that the force will be gradually increased during the month of August until 1,000 men are working. How long the shops will remain open depends of course on what contracts the company secures. At present it is working on a few small orders, the largest being for the Lake Shore & Michigan Southern, and the officers say that the outlook for new contracts is not very encouraging.

BRIDGE BUILDING.

Babylon, L. I.—At a special election last week it was voted to issue town bonds for $4,500 to defray the expenses of building a steel bridge over Carll's river, near the Argyle Hotel.

Baltimore, Md.—The Baltimore & Sparrow's Point Electric Railroad has asked permission of the board of public works to build bridges over Colgate and Bear creeks.

Beaumont, Tex.—The steel drawbridge on the line of the Texas & New Orleans Railroad, one of the Southern Pacific lines, over the Neches river at Beaumont has been completed.

Birmingham, Ala.—The County Commissioners of Shelby and Jefferson counties are considering plans for a new bridge over the Cahaba river at Bainsford, near Birmingham. The bridge is not to cost over $6,000 and Shelby county has agreed to bear one-fourth of this cost.

Boston, Mass.—The Charles river bridge has been declared unsafe by City Engineer Jackson, of Boston, and it will be closed to public travel and probably never again be used. The superstructure, as well as the foundation, has been subjected to numerous repairs, but the woodwork and masonry are in bad condition. No immediate action will be taken to provide a substitute bridge.

Brantford, Ont.—The Brantford Township Council has decided to build a steel bridge over Whitman's creek at Apps Mills.

Cambridge, Md.—The Delaware Construction Co., of Wilmington, has been awarded the contract for erecting a bridge over the Choptank river at Cambridge, Md., at a cost of $4,995.

Chambersburg, Pa.—Viewers have been appointed by the court to inspect the site of a proposed county bridge over the East Branch of the Antietam at Good's Fording in Washington township.

Columbus, O.—The Cleveland, Akron & Columbus and the Norfolk & Western roads have expressed a willingness to comply with the order of the county commissioners to replace the Harbor road bridge with a new structure, but want an electric street car line to help bear the expense. Until the question is settled no contract for the construction of the bridge is likely to be let.

Dubuque, Ia.—The bill to authorize the construction of a bridge over the Mississippi river at Dubuque, Iowa, has passed both branches of Congress.

Hespeler, Ont.—An iron bridge is to be erected over Speed river at this town.

Lexington, Ky.—Nelson & Wallis, engineers and contractors, of Lexington, Ky., were recently awarded two contracts for iron bridges, one 90 ft. long at Lexington, and one 63 ft. long, with masonry, at Lawrenceburgh, Ky., The structural work in each case will be done by the King Bridge Co., of Cleveland, for the contractors.

New Brunswick, N. J.—The Middlesex Board of Freeholders has rescinded the contract entered into to build the bridge at Raritan Landing for $29,500 under the bid of the Berlin Bridge Co. The award of this contract has been the subject of a recent investigation, and it was brought out that the bridge could be built for $10,000 less than the amount of the award.

Niagara Falls, N. Y.—The Niagara Falls Hydraulic Power & Mfg. Co. has let the contract for the construction of an iron bridge across the hydraulic canal at Buffalo avenue to the Horseheads Iron Works, of Horseheads, N. Y.

Philadelphia.—The engineering department of the Pennsylvania Railroad has been for some weeks past engaged in making soundings for the piers of the new bridge that is to be built across the Delaware river at Bridesburg. On the Pennsylvania side rock was found at a depth of 80 ft., but on the New Jersey side the drills have gone to 120 ft. without touching rock bottom.

Plymouth County, Mass.—Bids will be received at the office of the Plymouth County Commissioners until July 31 for building a stone arch bridge over Indian Head river between the towns of Hanover and Pembroke, Plymouth County.

Star, Idaho.—The Bullen Bridge Co. of Portland, Or., has been awarded the contract for building a bridge across the Boise river at Star for $1,400.

Sunbury, Pa.—The Pennsylvania Railroad is erecting an iron bridge over the Susquehanna river between this place and Northumberland, to take the place of the old wooden one.

Vicksburg, Miss.—Bids will be received until Aug. 10 for building the superstructure of a single track bridge over Big Black creek, 12 miles east of Vicksburg, on the Alabama & Vicksburg Railroad. Profiles and specifications can be obtained at the office of G. B. Nicholson, Chief Engineer, Seventh and Elm streets, Cincinnati, Ohio. All bids must be addressed to C. C. Harvey, President, Seventh and Elm streets, Cincinnati, Ohio. The bridge will have two 95 ft. plate girders and one 180 ft. through truss.

Warren, Pa.—The Warren County Commissioners are considering the construction of new bridges over Jackson Run on the North Warren road and over Glade Run in Glade township. The present ones are badly out of repair.

Waverly, N. Y.—The Groton Bridge Co. has the contract for building the new bridge across the Chemung river on the site of the old Tozer bridge.

Yankton, S. D.—The steel bridge across the Jim river, three miles east of Yankton, has been completed. It is an arch bridge, 42 ft. high and 280 ft. long, being probably the longest single span bridge in the state.

Youngstown, O.—The Youngstown Bridge Co. has been awarded the contract for the Pope's Crossing bridge on the Washington & Chesapeake Beach Railroad, and the Black River bridge at Vicksburg, Miss., consisting of 150 ft. draw span, a 50 ft. and a 100 ft. fixed span, together with a viaduct approach.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Boston & Maine, quarterly, $1.50 on the common stock, payable Aug. 15.

Burlington, Cedar Rapids & Northern, semi-annual, 1½ per cent.

Illinois Central, 2½ per cent., payable Sept. 1.

Long Island, quarterly, 1 per cent., payable Aug. 1.

Mahoning Coal Railroad Co., 3 per cent. on the common stock, payable Aug. 1.

Toledo & Ohio Central, 1¼ per cent. on the preferred stock, payable Aug. 20.

Technical Meetings.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *Roadmasters' Association of America* will hold its annual convention in New York city beginning Sept. 11 and lasting three days. The first meeting will be held in Tammany Hall and the following ones at the Broadway Central Hotel which will be the headquarters of the Association.

The Freight Claim Association will hold its semi-annual meeting in Buffalo, N. Y., on August 8. The headquarters will be at the Hotel Iroquois.

The *New England Roadmasters' Association* will hold its annual convention at the American House, Boston, Mass., Aug. 15 and 16.

The *Western Railway Club* meets in the rooms of the Central Traffic Association, Monadnock Building, Chicago, on the third Tuesday in each month, at 2 p. m.

The *New York Railroad Club* meets at the rooms of the American Society of Mechanical Engineers, 12 West Thirty-first street, New York city, on the third Thursday in each month, at 8 p m.

The *New England Railroad Club* meets at Wesleyan Hall, Bromfield street, Boston, Mass., on the second Wednesday of each month.

The *Central Railway Club* meets at the Hotel Iroquois, Buffalo, N. Y., on the fourth Wednesday of January, March, April, September and October.

The *Southern and Southwestern Railway Club* meets at the Kimball House, Atlanta, Ga., on the third Thursday in January, April, August and November.

The *Northwestern Railroad Club* meets at the Ryan Hotel, St. Paul, on the second Tuesday of each month, at 8 p. m.

The *Northwestern Track and Bridge Association* meets at the St. Paul Union Station on the Friday following the second Wednesday of March, June, September and December, at 2.30 p. m.

The *American Society of Civil Engineers* meets at the House of the Society, 127 East Twenty-third street, New York, on the first and third Wednesdays in each month, at 8 p. m.

The *Western Society of Engineers* meets on the first Wednesday in each month, at 8 p. m. The headquarters of the society are at 51 Lakeside Building, Chicago.

The *Engineers' Club of Philadelphia* meets at the House of the Club, 1122 Girard street, Philadelphia, on the first and third Saturdays of each month, at 8 p. m.

The *Boston Society of Civil Engineers* meets at Wesleyan Hall, 36 Bromfield street, Boston, on the third Wednesday in each month, at 7.30 p. m.

The *Engineers' Club of St. Louis* meets in the Missouri Historical Society Building, corner Sixteenth street and Lucas place, St. Louis, on the first and third Wednesdays in each month.

The *Engineering Association of the South* meets on the second Thursday in each month, at 8 p. m. The Association headquarters are at The Cumberland Publishing House, Nashville, Tenn.

The *Engineers' Society of Western Pennsylvania* meets in the Carnegie Library Building, Allegheny, Pa., on the third Tuesday in each month, at 7.30 p. m.

The *Technical Society of the Pacific Coast* meets at its rooms in the Academy of Sciences Building, 819 Market street, San Francisco, Cal., on the first Friday in each month, at 8 p. m.

The *Association of Engineers of Virginia* holds informal meetings on the third Wednesday of each month, from September to May, inclusive, at 710 Terry Building, Roanoke, at 8 p. m.

The *Denver Society of Civil Engineers* meets at 36 Jacobson Block, Denver, Col., on the second and fourth Tuesdays of each month except during July, August and December, when they are held on the second Tuesday only.

The *Montana Society of Civil Engineers* meets at Helena, Mont., on the third Saturday in each month, at 7.30 p. m.

The *Engineers' Club of Minneapolis* meets in the Public Library Building, Minneapolis, Minn., on the first Thursday in each month.

The *Canadian Society of Civil Engineers* meets at its rooms, 112 Mansfield street, Montreal, P. Q., every alternate Thursday, at 8 p. m.

The *Civil Engineers' Club of Cleveland* meets in the Case Library Building, Cleveland, O., on the second Tuesday in each month, at 8 p. m. Semi-monthly meetings are held on the fourth Tuesday of each month.

The *Engineers' Club of Cincinnati* meets at the rooms of the Literary Club, No. 24 West Fourth street, Cincinnati, O., on the third Thursday in each month, at 7:30 p. m. Address P. O. Box 333.

The *Engineers' and Architects' Club of Louisville* meets in the Norton Building, Fourth avenue and Jefferson street, on the second Thursday in each month, at 8 p. m.

The *Foundrymen's Association* meets at the Manufacturers' Club, Philadelphia, Pa., on the first Wednesday in each month.

American Institute of Mining Engineers.

The 67th meeting of the Institute will be held at Bridgeport, Conn., about the beginning of October (probably October 2 to 6). Particulars concerning date and programme will be announced later by the Secretary.

New England Roadmasters' Association.

The following subjects will come up for discussion at the twelfth annual convention of the New England Roadmasters' Association, to be held at the American House, Boston, August 15th and 16th. (1) Labor on track; labor required under varying conditions, the amount of traffic and the season of the year being considered. (2) Snow plows and flangers; best method of keeping tracks clear of snow. (3) Guard rails and guard rail distances. (4) Rail joints; improvements made and defects yet to be overcome. (5) Track tools, nut locks, spikes, bolts, rail braces and tie plates. (6) Review of previous year's discussions. In a large room adjoining the convention hall there will be exhibited tools, material and track devices of interest to railroad maintenance of way men.

PERSONAL.

—Mr. Mordecai W. Jackson, founder of the Jackson & Woodin Mfg. Co., of Berwick, Pa., and senior member of the firm, died at his home in Berwick, July 19, aged 80 years.

—Mr. Edwin H. Abbot has resigned as President and Director of the Wisconsin Central Railroad, in order that he may serve as a trustee of the bonds with the Reorganization Committee.

—Mr. Frederick Swift, Receiver and Director of the Cleveland, Canton & Southern Railroad, has resigned both offices, and Judge Ricks has appointed General Superintendent J. W. Wardwell, sole receiver.

—Mr. Frederick Rogers, Assistant General Freight Agent of the Chicago, Burlington & Quincy, with headquarters at Chicago, has resigned on account of ill health. He has held the office since 1886, having been previously general agent at Pittsburgh.

—Mr. Albert S. White, whose resignation as General Freight Agent of the Cleveland, Cincinnati, Chicago & St. Louis, was noted last week, has been appointed General Manager of the Erie Despatch Fast Freight Line, an office which has been vacant for some months.

— Mr. John C. Moulton, a prominent business man in New Hampshire, died at Laconia, N. H., aged 84 years. He was for many years at the head of the Laconia Car Works, and was proprietor of several factories and other establishments, and was for many years president of the Nashua, Acton & Boston Railroad.

—Judge John Porter, General Manager of the Chicago, Iowa & Dakota of Eldora, Iowa, has resigned as President and General Manager of this short railroad in Iowa, of which he has been the manager since its construction in 1884. Other changes in the management are also to be made, the new officers representing the interests of Mr. John I. Blair.

—Mr. E. M. Bronson has been appointed Assistant General Passenger Agent of the Pennsylvania road to succeed Col. Samuel Moody, the appointment to take effect August 1. Mr. Bronson has been with the Pennsylvania 11 years. His place as special passenger agent will be filled by Mr. Frank Stevenson, who has been Southern traveling passenger agent for several years.

—Mr. Lewis B. Canniff, father of General Superintendent W. H. Canniff, of the Lake Shore & Michigan Southern, died at his home in Dover, Mich., on July 9. He entered the railroad service as an employee of the Michigan Southern when it was completed to Hinsdale, and remained in its employ until it was merged into the Lake Shore, when he retired to a farm.

—Mr. William Barclay Parsons, Chief Engineer of the Rapid Transit Commission of New York, sailed for England last Tuesday. He goes abroad to make certain studies in the matter of transportation of passengers in cities and will spend most of the short time at his disposal in England, although he will go to Paris. He will probably not be more than two weeks in England and on the Continent.

—Mr. O. G. Heilman, an instructor in the department of experimental engineering of Sibley College, Cornell University, died at Williamsport, Pa., of lockjaw last week, brought on by a wound from the premature explosion of a cannon on July 4. He was graduated from Sibley College in 1891, and had been employed as instructor since. He was a member of the American Society of Mechanical Engineers.

—Mr. Samuel Moody, Assistant General Passenger Agent of the Pennsylvania lines at Cincinnati, has resigned his position on account of failing health. Mr. Moody has been in the service of the company for over 10 years. His first service for the company was at Rochester as order agent. Shortly afterward he was made traveling passenger agent, and later district passenger agent in Pittsburgh. In February, 1893, he was appointed Assistant General Passenger Agent of the lines west at Cincinnati. E. M. Bronson, now special passenger agent of the company at Cincinnati, will succeed Mr. Moody.

—Mr. James Maglenn, whose appointment as Superintendent of Motive Power of the Seaboard Air Line, was noticed last week, has been for some time the Master Mechanic of the Raleigh & Gaston and the Carolina Central, operated roads of that line, with office at Raleigh, N. C. Mr. B. S. Shaw, his successor as Master Mechanic at Raleigh, has been transferred from Abbeville, S. C., where he was Master Mechanic of the Georgia, Carolina & Northern. The office of Master Car Builder, which is a new one on the Seaboard & Roanoke, has been created and Mr. D. W. Ballantine given that title.

—Professor James P. Nelson, occupying the chair of Civil Engineering in the State College of Kentucky, and formerly Chief Engineer of the Newport News & Mississippi Valley Company's Eastern Division, and Mr. W. R. Wallis, have associated themselves together under the firm name of Nelson & Wallis, with office at Lexington, Ky., to practice as consulting engineers, and to engage in general contract work. Professor Nelson was engineer in charge of the highway bridge, 406 ft. long, recently constructed at Frankfort, Ky., for that city by the King Bridge Co., and Mr. Wallis was then associated with him.

—President Roberts, of the Pennsylvania Railroad, and President Depew, of the New York Central Railroad, were fellow passengers on the steamship Paris which sailed for England, July 18. Both officers go abroad for an indefinite stay. During the same week the incoming steamers to New York carried President Ingalls, of the Big Four, and Vice-President Webb, of the New York Central, the former returning from a trip to England undertaken in connection with the Chesapeake & Ohio's Atlantic freight steamers, and the latter from a journey through England taken solely for recreation. Mr. William H. Brown, Chief Engineer of the Pennsylvania, will sail for Europe on August 1, and will be gone two months.

—Mr. A. Pope has been appointed General Freight and Passenger Agent of the Savannah, Americus & Montgomery road, to take the place of Mr. C. W. Cheers, who resigned to accept the position of General Manager of the Georgia Midland & Gulf, where he succeeded Mr. G. Gunby Jordan, appointed railroad commissioner of Georgia. Mr. Pope has been connected with the traffic departments of many prominent Southern lines. He was at one time General Freight and Passenger Agent of the Atlantic Coast Line; then he was connected with the traffic department of the Richmond & Danville; afterward General Freight Agent of the Norfolk & Western and more recently he has been Secretary of the Southern Railway & Steamship Association.

ELECTIONS AND APPOINTMENTS.

Chicago, Milwaukee & St. Paul.—General Passenger Agent Heafford has issued a circular announcing the closing of Southern Passenger Agency, as follows: After seven years of continuous faithful service, Mr. D. C. Brady retires from the employ of this company, on July 31, 1894, and on that date the office of Southern Passenger Agent will be abolished. The headquarters at Louisville will also be discontinued. Commencing August 1, Mr. J. G. Everest will, in addition to his duties as General Traveling Passenger Agent, take special charge of the territory heretofore under Mr. Brady's jurisdiction, and correspondence should be addressed to him at No. 207 Clark street, Chicago.

Dayton, Lebanon & Cincinnati.—The following directors were elected at the annual meeting held in Cincinnati, O., on July 12: Samuel Hunt, George W. Lewis, William Huffman, W. P. Callahan, H. E. Talbott, Frederick H. Alms, George B. Kerper, Walter St. John Jones and H. B. Morehead.

Fort Worth & Denver City.—C. C. Drake, Chief Clerk in the General Passenger and Freight Department, has been appointed General Agent of the Freight and Passenger Departments, with office at 401 Main street, Fort Worth, Tex.

Indiana, Decatur & Western.—The following are the officers of this company, which succeeds the Indianapolis, Decatur & Western; Henry W. Smith, President; R. B. F. Pierce, General Manager; John S. Lazarus, General Freight and Passenger Agent; George Graves, Superintendent; A. P. Lewis, Auditor; C. B. McVay, Cashier and Purchasing Agent; John McKenna, Master Mechanic with headquarters at Indianapolis, Ind.

Iowa Central.—H. Gabelman has been appointed Auditor with headquarters at Marshalltown, Ia., to succeed E. S. Benson, resigned.

Kansas City Northwestern.—H. G. Clark, General Superintendent of the Missouri Pacific, has been appointed General Superintendent of Kansas City Northwestern Railroad, a branch of the Missouri Pacific.

Ketner, St. Mary's & Shawmut.—J. H. Beardsley, of Bradford, Pa., has been appointed General Manager.

Lake Shore & Michigan Southern.—A. M. Beckel, formerly District Passenger Agent, has been appointed Division Passenger Agent of the Michigan Southern division.

Lake Street Elevated (Chicago.)—Vice-President Parsons, of the West Chicago Street Railroad Co., and Vice-President Furbeck of the North Chicago Street Railroad Co. have been elected directors of the Lake Street Elevated Railroad. They take the places of Messrs. Witbeck and Richardson, who have retired by request.

New York, Lake Erie & Western.—Frederick J. Goodfellow has been appointed Division Freight Agent at Bradford, Pa., in charge of the Western and Bradford divisions, to succeed N. C. Barlow, promoted to Freight Claim Agent in place of S. H. Wenck, resigned. Mr. Wenck is to continue as Auditor of the Erie Despatch. Mr. Goodfellow is now Division Freight Agent of the Buffalo & Southwestern.

Oregon Railway & Navigation Co.—A circular has been issued announcing that D. C. O'Reilley has been appointed Assistant General Freight Agent, with office at Portland, Ore.

Pittsburgh, Cincinnati, Chicago & St. Louis.—The notice on page 513 of last week's issue in regard to the change of the office of J. F. Miller, General Superintendent, from Columbus to Chicago, was incorrect. Mr. Miller's office has not been changed but it is still located at Columbus. The basis for the rumored change of the office was the fact that he was stationed in Chicago during the continuance of the strike at that point.

Pittsburgh & Western.—R. Finney, Jr., has been appointed Purchasing Agent with headquarters at Alleghany, Penn.

Rutland.—The annual meeting was held in Rutland, Vt., on July 23. P. W. Clement, G. H. Ball, Le Grand B. Cannon, John W. Stewart, H. G. Young, Chester Griswold, David Wilcox, C. A. Walker and Edgar Harding were elected directors. The last two are the only new directors. P. W. Clement was elected President, H. G. Young, Vice-President, and H. G. Smith, Treasurer.

Savannah, Americus & Montgomery.—Major A. Pope has been appointed General Freight and Passenger Agent to succeed C. W. Chears resigned. Maj. Pope was formerly Secretary of the Southern Railway & Steamship Association.

Wichita Falls.—The following is a list of the incorporators of this road, which was chartered in Texas, recently: J. A. Kemp, R. E. Huff, A. Newby, O. T. Bacon, A. Zondelowitz, A. D. Anderson and R. M. Moore, of Wichita Falls, Tex., A. D. Goodenough of Henrietta, Tex., M. J. Tomkins, of Vernon, Tex., and M. Larken, Leon Blum, Julius Rooge, H. Kempner and J. Davis, of Galveston, Tex.

RAILROAD CONSTRUCTION,

Incorporations, Surveys, Etc.

Amsterdam, Johnstown & Gloversville.—The survey for this recently incorporated road was commenced last week under the direction of Lawton Caton, of Gloversville, New York. The road, it is expected, will be completed to Johnstown this fall. The southern terminus will be at Akin, near Amsterdam, and the Northern terminus will be at Gloversville, the distance between the two points being over 10 miles. J. H. McClement, of New York City, is one of the directors. The road will be narrow gage and will parallel the Fonda, Johnstown & Gloversville road.

Atlantic Coast Line.—The extension to connect with the South Bound road at Denmark, S. C., completed early in July, will be opened for traffic by August 1. The line extends from Remini, Clarendon county, S. C., to Denmark, at the junction of the Augusta division of the South Carolina Railroad and the South Bound Railroad, in Barnwell county, S. C., 44 miles. The Manchester & Augusta, of which the new road is an extension, now embraces 63 miles of road, including 19 miles completed in 1888 from Sumter to Remini on the Santee river. That portion just built is through a country that is already well settled and extensively cultivated. The country is well timbered and well-watered, and is a rich cotton district. The track of the new road is laid with 70 lb. rails and the rivers and waterways over which its crosses are spanned with steel bridges. The principal streams crossed are the Santee and the North and South Edisto rivers, while there are numerous smaller streams along the line. The principal towns connected by the Manchester & Augusta are Sumter, which contains a population of 4,000, Remini with 250, Orangeburg with 5,000 and Denmark with 500. The road traverses portions of Sumter, Clarendon, Orangeburg and Barnwell counties, and at the town of Sumter junction is made with the other roads of the Atlantic Coast Line. At Denmark it forms a junction with the South Bound railroad running to Savannah and Florida and with the South Carolina & Georgia.

Buffalo & Susquehanna.—Contractor D. W. Crego, of Buffalo and Gaines, Pa., completed the grading on the Ansonia branch last week. The work of putting down the rails will be pushed as rapidly as possible, in order to have trains running August 1. The line is 13 miles long from Galeton east to Ansonia, Pa.

Canadian Railroad Subsidies.—The Dominion government has voted the following subsidies to railroads in Canada in addition to those referred to last week: For a road from Newport or Windsor to Truro, N. S., and to Eastville, 90 miles, $300,000; Nipissing & James Bay, for 25 miles from near North Bay Station on the Canadian Pacific towards James Bay, Ont., $217,000; Lotbinière & Megantic, Que., $48,000; Drummond County, from St. Leonard northerly to Chaudiere Junction, Que., $96,000; for a railroad from Lime Ridge, Que., into the County of Megantic, $160,000; Strathroy & Western Counties, from St. Thomas towards Forest Station on the Grand Trunk, $80,000; Parry Sound Colonization, for 20 miles from Parry Sound, $64,000; Manitoulin & North Shore, from Little Current to Nelson on the Algoma branch of the Canadian Pacific, $32,000; United Counties for 32 miles from Iberville to Sorel, $102,400; Joliette & St. Jean de Matha for 12 miles from St. Jean de Matha to St. Emelie de L'Energie, $38,400; Great Northern for 22 miles, $70,400; Quebec & Lake St. John, for 14 miles of the Chicoutimi branch, $44,800; Pontiac & Ottawa, for 23 miles to Ferguson's Point, $73,600; Ottawa & Gatineau Valley, for 20 miles from the eastern end of the 62 miles already subsidized towards Desert, $64,000; Canada Eastern, for six miles from the Town of Chatham to Black Brook and to the village of Nelson, $32,000; for a railroad from Cross Creek Station, on the Canada Eastern road, to Stanley village, $19,200; Restigouch & Victoria, for 20 miles towards Grand Falls, $64,000; Central Railway for 15 miles from Chipman Station to the Newcastle Coal Fields, $48,000; Tobique valley, for 15 miles from the present terminus at Plaister Rock easterly, $48,000; Towards the restoration or renewal of the railroad bridge on the Southeastern Railway over the Yamaska river at Yamaska, $50,000; Boston & Nova Scotia Coal & Railway Co., for 10½ miles to Broadcove; also for 25 miles from the Cape Breton Railway, near Orangedale, towards Broadcove, $113,600; for a railroad from Port Hawkesbury towards Cheticamp, 25 miles, $80,000; Manitoba Northwestern Railway Co. for 100 miles towards Prince Albert, $320,000; for a line of road from the junction of the Elk and Kootenay river to Coal creek 34 miles, $108,800; for a railroad from Abbottsford Station on the Moosomin Branch of the Canadian Pacific to the Town of Chilliwack, B. C., 21 miles, $67,200; Nicola Valley, for 28 miles towards Nicola Lake, B. C., $89,600; Nakusp & Slocan, for 38 miles from the Town of Nakusp, B. C., $121,600; Pontiac & Kingston, for 22 miles from Portage du Fort to Upper Thorne Centre, Que., $70,400; New Glasgow Iron, Coal & Railway Co., for five miles from Sunnybrae to Kerrogare, N. S., $16,000; South Shore, for 35 miles from Yarmouth towards Shelburne, N. S., $112,000; Cape Breton Railway Extension, for 30 miles, from Port Hawkesbury to St. Peter's, N. S., $96,000; for a railroad from a point on the Intercolonial Railway, between Norton and Sussex Stations towards Havelock, N. B., 20 miles, $64,000; for railroad from St. John's to Barnesville, N. B., 10 miles, $32,000; for a line of railroad from Cap de la Magdeleine, Que., to connect with the Piles Branch of the Canadian Pacific Railway, three miles, $9,600; Canada Eastern, for an extension of one mile, $3,200; Great Northern, for 30 miles from a point on the Canadian Pacific near Maskinonge or Louisville, Que., towards the River Mattawa, $96,000; Lindsay, Bobcaygeon & Pontypoel for 32 miles, from Bobcaygeon to the Pontypoel, Ont., $102,400.

Cheat River.—The survey for this road in West Virginia is to be made by Jonathan Barrett. The company was chartered several months ago, and the proposed road is to start at Rowlesburg, on the Baltimore & Ohio, following Cheat river to Cheat Haven, three miles above its mouth, connecting with the Baltimore & Ohio. U. S McGuffy, of Pittsburgh, is President.

Iowa, Lake Superior & Gulf.—This company filed articles of incorporation with the Secretary of State of Nebraska on July 18. A. J. Westfall, labor candidate for governor of Iowa in 1891, is one of the seven incorporators. This is the well known populist scheme. The charter has a clause providing that the road is to be operated for the public, and whenever the state or the nation wishes to operate it without toll or charge, it may do so.

Milwaukee Belt Terminal.—The filing of a mortgage for $2,500,000 in favor of the Union Trust Co., of New York, was noted last week. The Terminal Company was formed to build a belt line in Milwaukee county and affording terminal facilities for railroads desiring to enter the city of Milwaukee. Henry L. Faris is president of the company and Theodore L. Talbot is the Secretary. The Terminal Company is authorized to build railroads, wharves, elevators, machine shops warehouses, and other terminal facilities. The Belt Line Company was organized four or five years ago by Milwaukee men. A number of Eastern men became interested, and the stock was largely taken by New York capitalists. Plans were almost completed when the project was dropped and little has been done until the past few months, when renewed efforts were made to secure right of way in the city. The franchise is valuable and gives the company authority to lay railroad tracks in the city limits.

Monterey & Mexican Gulf.—Captain W. H. Wentworth, Chief Engineer, has finished the survey of the branch road to the San Pablo mines in Mexico, and work was to have begun some days ago.

New Roads.—Frank C. Ross has returned to Tacoma, Wash., from a trip to Enumclaw, made to estimate the cost of a proposed railroad from a point on the Northern Pacific main line, between Enumclaw and Buckley, Wash., and coal fields, 20 miles in toward the Natchez pass.

C. A. Lawrence, of Fairmont, W. Va., J. T. McGraw, of Grafton, W. Va., J. P. Clifford, and A. G. Smith, of Clarksburg, have applied for a charter to build a railroad from Clarksburg by way of Ten Mile Creek to New Martinsville, where it will cross the Ohio river and make connection with the Valley Railroad. This road will open up a new coal field. The surveys are being made.

Pennsylvania Midland.—A mortgage for $1,900,000 in favor of the Provident Life & Trust Co., of Philadelphia, was recorded at Hollidaysburg, Pa., by this company last week. The projected line extends from Altoona, Blair county, to Ashtola, Somerset county, a distance of 80 miles, and part of the road will be opened to traffic in December. Over 500 men are now working on the construction in Bedford county, under E. A. Tennis, of Thompsontown, Pa., who has the contract for the section now building. The entire length of the proposed road is 80 miles, including the following divisions: Hyndman to Mann's Choice, Pa., 15 miles; Mann's Choice to Brodis Mills, 35 miles; Brodis Mills to Altoona, 15 miles; Osterburg to Ashtola, 15 miles. Some 300 men are now working near Claysburg, and the company expects to have a portion of the line open for traffic by December. E. A. Tennis, of Thompsontown, Pa., is the contractor, and George B. Orlady, of Huntingdon, Pa., President.

San Pete Valley.—The officers announce that work will begin on the extension from Manti to Moroni, Utah, next week. The line will be extended seven miles. Standard gage ties will be used, and the road bed built with a view to changing to standard gage when arrangements are made for extending to the Nevada State line.

GENERAL RAILROAD NEWS.

Altoona, Clearfield & Northern.— The contest for the control of this railroad, running out of Altoona, Pa., to the northeast for miles, which has been carried on for several years between F. G. Patterson, of Altoona, and S. P. Langdon, of Philadelphia, has been decided in favor of the former on all points by the Pennsylvania State Court, at Williamsport, in an order by Judge Metzger, sustaining the report of he master. Mr. Patterson was the former president of the railroad, but two years ago when the annual meeting was held his claim to a right of vote on certain shares of the capital stock was denied and as a result two Boards of Directors were elected. Both claimed possession of the property until finally receivers were appointed. Recently the railroad has been operated by Mr. Patterson and Mr. Langdon acting as joint receivers. The judge said that the chief point to be decided was the validity of Patterson's claim to own 600 shares of the capital stock. He then recited that in September, 1891, Patterson subscribed for these 600 shares. The company was then endeavoring to secure a loan of $60,000 which could not be negotiated without increasing the indebtedness of the company beyond its legal limit unless additional stock was subscribed. In January, 1893, he tendered the treasurer 10 per cent. of his subscription for this stock which was refused; and later tendered the entire amount of the subscription, which was also refused. The judge enters into a discussion as to whether Mr. Patterson's verbal subscription in September, 1891, was valid, and decides that as the company profited by the subscription they cannot later question it; and he decides that it was regular and binding. He also points out that the subscription was not questioned until October, 1893, two years after it was made. He therefore decides that Mr. Patterson was legally entitled to vote under these 600 shares of stock, and that the attempt of the so-called Langdon Board of Directors to cancel the certificate was illegal. He then takes up the question as to whether Patterson had the right to sell his stock to the Pennsylvania Railroad or its officers. He denies that the railroad parallels certain of the leased lines of the Pennsylavnia as claimed by Langdon and dismsses the bill of the complainant. Mr. Langdon states that he will appeal the case to the Supreme Court.

Atchison, Topeka & Santa Fe.—The following table gives the earnings and expenses of this system for the month of May, and for the fiscal year to May 31, 1894, as compared with the same period of 1893.

Month of May.	1894.	1893.	Inc. or Dec.
Operated mileage	7,457	7,480	D 23
Gross earn	$2,622,423	$3,603,439	D $981,016
Oper. expen	2,246,085	2,219,288	I 26,797
Net earn	$376,338	$1,384,151	D$1,007,813
Eleven months to May 31.			
Operated mileage	7,476	7,480	D 4
Gross earn	$32,193,584	$38,021,242	D$5,827,658
Oper. expen	23,457,114	26,364,400	D 2,907,286
Net earn	$8,736,470	$11,656,842	D$2,920,372

GENERAL SYSTEM.

Month of May.			
Operated mileage	9,321	9,344	D 23
Gross earn	$3,224,381	$4,366,297	D$1,141,916
Oper. expen	2,703,678	2,728,898	D 25,220
Net earn	$520,703	$1,637,399	D$1,116,696
Eleven months to May 31.			
Operated mileage	9,340	9,344	D 4
Gross earn	$39,406,788	$46,694,221	D$7,287,433
Oper. expen	28,493,231	31,936,021	3,442,790
Net earn	$10,913,557	$14,758,200	$3,844,643

Baltimore & Eastern Shore.—The decree for the sale of this railroad under the first mortgage made in 1890, in the foreclosure proceedings brought by the Scranton Steel Co. and the Atlantic Trust Co., has been made by the United States Court, at Baltimore. This mortgage is for $1,500,000, and interest has been in default since January, 1891. This proceeding is a preliminary step to carry out an ambitious plan for the reorganization and development of the property. Agreements have been made for the consolidation of the railroad with the Maryland, Eastern Shore and Choptank Steamboat Companies. A new company, the name of which has not yet been decided upon, will be organized to operate the consolidated property. John E. Searles of New York, Secretary of the Sugar Trust, J. S. Ricker, of Portland, Me., and Enoch Pratt, of Baltimore, are among those chiefly interested. The new company will have a bonded indebtedness of $1,250,000, and the sale of these bonds will provide for the purchase of the steamboat lines and pay off the receivers' certificates and other liens against the railroad ahead of the mortgage. The common stock will be $1,000,000, which is the amount of the present common stock of the railroad.

Baltimore & Lehigh.—The Bondholders' Committee, which purchased the Maryland Division of this railroad, the old Maryland Central Line, at the recent foreclosure sale, has completed a plan of reorganization for the property but will not attempt to carry out the reorganization at present. The receiver, W. H. Bosley, has been directed to deliver the railroad to the committee on July 31, and a temporary organization will be effected to operate the railroad pending the carrying out of the reorganization scheme. The new company will have a capital stock of $3,000,000 of which $850,000 will be issued to the holders of the present first mortgage bonds in exchange for the bonds which are to be surrendered and held by the railroad. The balance of the stock will not be issued. The purchase price of the railroad, $250,000, will be secured by a mortgage.

Baltimore & Ohio.—The following statement gives the earnings for June and the fiscal years to June 30, of the lines east and west of the Ohio river.

Month of June.	1894.	1893.	Dec.
Gross earn	$1,673,525	$2,232,128	$558,603
Oper. expen	1,097,584	1,489,273	391,688
Net earn	$575,941	$742,855	$166,914
Twelve Months to June 30.			
Gross earn	$22,439,602	$26,214,807	$3,775,205
Oper. expen	15,568,162	19,041,982	3,473,818
Net earn	$6,871,439	$7,172,825	$301,386

Cape Fear & Yadkin Valley.—The question whether Gen. Jno. Gill, who was in February last appointed temporary receiver, should be made permanent receiver, which came up before Judge Simonton, of the United States Court at Greensboro, N. C., last week, was contested by the different interests, his appointment being supported by the Farmers' Loan & Trust Co., and opposed by the North Carolina Improvement Co., which formerly controlled the road, and several local creditors.

Judge Simonton stated that there were four issues to be submitted, viz.: Shall Gill be removed as receiver? Shall there be a co-receiver appointed? Shall the second mortgage bondholders be made a party to this action? Shall the People's National Bank of Lynchburg, be made a party? He refused to make the bank a party. As to the other issues, he decided to hear argument. In arguing for the removal of Gill counsel claimed as one of the reasons why he should be removed that he was a party in interest. In replying, the attorney for the Farmers' Loan & Trust Co., Mr. Turner, claimed that Gill's appointment was not one made to wind up the affairs of the road, but that he was a mortgage receiver, a receiver to foreclose a mortgage. After the conclusion of argument, Judge Simonton announced that he would reserve his decision for a few days and up to this writing it has not been announced.

Choctaw Coal & Railway.—An order for the foreclosure sale of this road on Sept. 8 next, was issued last week by Judge C. B. Stuart, of the United States Court at South McAlester, Okla. The property will be purchased by the bondholders and the new company organized to operate the railroad will complete the proposed extenson to Oklahoma City. The reorganization plan prepared by the committee, of which G. H. Earle, of Philadelphia, is chairman, has been accepted by a large majority of the creditors and has been declared operative.

Evansville & Richmond—In the suit brought by a stockholder of the Evansville & Terre Haute Railroad Company to enjoin the company from paying interest on the bonds of the Evansville & Richmond Railroad which it had guaranteed, the court of Indiana has decided that as the Evansville & Terre Haute Railroad Company received the proceeds of the bonds which were sold by it with its guaranty, it cannot now repudiate its obligations. The interest in default since March 1 upon the Evansville & Richmond bonds under this guaranty must now be paid.

Illinois Central.—The income from traffic for the eleven months to May 31, 1894, as compared with the same period of 1893, is given in the following table:

	1894.	1893.	Inc.
Operated mileage	2,888	2,888	
Gross earn	$19,320,128	$18,142,785	$1,177,343
Oper. expen. and taxes	13,289,083	13,130,299	158,784
Net earn	$6,031,045	$5,012,486	$1,018,559

The gross receipts from traffic for the month of June, 1894, are estimated at $1,349,768; the receipts for June, 1893, were $1,952,405, being an estimated decrease of $602,637.

During the six months from May 1, to October 1, 1893, the receipts from traffic were greatly increased by the World's Fair at track. The receipts for June, 1892, are therefore reported again as affording a fairer basis for comparison with business under normal conditions. The gross receipts from traffic for the month of June, 1892, were $1,605,825; the receipts for June, 1894, are estimated at $1,349,768; being an estimated decrease of $256,057. The directors have declared a dividend of 2½ per cent. in cash from the net earnings for the year ending June 30.

Kansas City Northwestern.—This company, which has been organized by the purchasers of the property of the Kansas City, Wyandotte & Northwestern has assumed the operation of the railroad from Kansas City to Beatrice, Kan., 175 miles, and the Leavenworth branch. At the foreclosure sale of the railroad the property was purchased by George C. Smith and B. P. Waggener in the interest of the Missouri Pacific, and the Kansas City Northwestern was organized to assume this purchase. The road will be operated as a division of the Missouri Pacific, with H. G. Clark as General Superintendent.

La Porte, Houston & Northern.—The Texas railroad commission have authorized the railroad company to issue $15,000 in bonds per mile on 22 miles of the road from Houston to La Porte, Tex.

Memphis & Raleigh Springs.—This railroad, a suburban line at Memphis, Tenn., 11 miles long, which was projected as a steam road, was sold last week to the Citizen Street Railway Co., of which A. M. Billings, of Chicago, is the chief owner. The sale includes the springs and hotel at Raleigh. The purchase price is said to be $110,000.

Metropolitan Elevated (Chicago).—An injunction was issued last week in Chicago restraining the Metropolitan West Side Elevated Railroad Company from proceeding with the erection of its line between State street and Milwaukee avenue. The injunction was issued at the instance of the Lake Street Elevated railroad company, which claims it has an ordinance which gives it this right of way, under which that part of the northwest line of the complainant from Milwaukee avenue to State street was located in August, 1893. At this time, it is claimed, the defendant had not located its northwest line. It is shown the property sought to be taken by the defendant crosses the complainants' right of way, and the court is asked to prevent the defendant company from carrying out this proposed route.

Northern Pacific.—Brayton Ives, president of the company, this week issued a circular to the security holders, urging that they decline to deposit their bondholdings with the so-called Adams-Fitzgerald Committee. Mr. Ives recalls that in March, 1894, the Directors of the Northern Pacific advised against the bondholders making deposits of bonds with this committee. Mr. Ives points out that a committee of third mortgage bondholders, consisting of Messrs. Evans R. Dick, C. B. Van Nostrand and Max Ruckgaber, Jr., of New York, and Charlemagne Tower, Jr., of Philadelphia, has been formed to protect the rights of this issue of bonds.. "The continued decrease of earnings has rendered impracticable the preparation of a satisfactory plan of reorganization, and neither the committee nor the receivers have published detailed reports of the condition of the property. Hence there is no fit basis on which to rest a scheme to reorganize. Mr. Adams' committee has no plan to propose. The committee is opposed by a strong committee of second mortgage bondholders. It has not secured the co-operation of the Chicago & Northern Pacific committee, or of any of the branch and leased lines committees, although these latter represent $57 463,000 of bonds. Mr. Adams and his associates, while asserting that they are not in any way Villard representatives, do not and cannot deny that their committee was formed by men who have been for a long time in intimate relations with Villard." Mr. Adams, Mr. Ives says, was in business relations with Mr. Villard for 14 years, and assisted in the formation of the Oregon & Transcontinental road. Mr. Ives' circular continues: "The statement in the directors' circular that Mr. Adams' committee owned and controlled but a limited amount of bonds has been fully justified by the facts as developed. Mr. Adams admitted before the Governing Committee of the New York Stock Exchange on the 27th of June, that his committee had received actual deposits of but $11,594,000 consols, and that in this amount were included $7,500,000 deposited by the Deutsche Bank. In other words, they had been able to secure from the public during eight months of advertising and diligent personal efforts, but $4,000,000 of the bonds. To appreciate the full extent of the failure, the following figures must be understood. There are listed on the Stock Exchange bonds and stock of the Northern Pacific Railroad Company to the amount of $262,023,131. When it is remembered that of this amount $177,519,000 of bonds must of necessity be more or less affected by any scheme of reorganization, and that no intelligent or equitable plan could ignore the $84,504,131 of stock, it will be easy to judge of the claims of a reorganization committee which has received the temporary custody of only $11,594,000 out of these $262,023,131 of securities! Every bond deposited with this committee must pay a tax whether the committee succeeds or not. Mr. Ives then argues that support of the Adams committee will hamper the formation of a general reorganization committee which can undertake the reorganization in an impartial spirit; that the only safe and economical course for bondholders is to retain control of their bonds for the present and confide them only to a committee which is able and willing to indicate his plans. That no possible harm can come to bondholders by delaying action until such a commitee is formed.

South Atlantic & Ohio.—The suit by Dr. J. M. Bailey, a former receiver of this property to remove the present Receivers, J. C. Haskell and D. H. Conklin, has been decided against Dr. Bailey by the United States court at Lynchburg, Va. Dr. Bailey was one of the projectors of the railroad and for some time was president, and later receiver. The control of the railroad, which extends from Bristol to Big Stone Gap tunnel, Tenn., about 70 miles, was secured by other parties, and after a time Dr. Bailey was removed as receiver. He has made two attempts to forcibly take possession of the railroad, and has carried on a long litigation to secure an order from the courts to give him possession of the property which is now decided adversely to his claims.

Southern Central.—Thomas C. Platt, President of the company, is now operating this railroad as Receiver. This appointment was made as the outcome of the application on behalf of the Lehigh Valley Railroad, which operates the railroad, made to the Attorney-General of New York to have him begin suit to dissolve the corporation. The road is operated by the Lehigh Valley under a lease made in 1887. It is about 115 miles long from Sayre, Pa., at the state line north to Lake Ontario. The Lehigh Valley does not guarantee the interest on the bonds, the rental under the lease being the net earnings, and the road only meets its operating expenses. The interest on the bonds has been defaulted since 1888. The Lehigh Valley Railroad owns nearly all the stock and for some time past an effort has been made to reorganize the property. At the hearing before the Attorney-General the officers of the road announced that the conflicting interests in the property had been adjusted and the proposed reorganization could now be carried out.

Western New York & Pennsylvania.—The time for receiving deposits under the reorganization plan expired on July 14 and nearly 170,000 shares, or 85 per cent. of the entire capital stock of 200,000 shares, had accepted the plan and paid their assessments on that date. Nearly $19,000,000 (including $500,000 held in the treasury) out of a total of $20,000,000 bonds assented. The preliminary papers for the foreclosure of the property are now being prepared, and it is expected that by the first of the year the road will have been restored to its security holders.

TRAFFIC.

Traffic Notes.

The Great Northern Railway has made a traffic arrangement for through rates on passenger and freight over the Oregon Railway & Navigation Co's. line from Spokane to Portland, Ore., and intermediate places.

The Philadelphia & Reading has withdrawn the Sunday trains recently put on to make frequent trips over a circuit extending from the terminal station at Market street, Philadelphia, to the parks in the northern part of the city and returning by another route. The number of passengers was not sufficient to pay the expenses of the trains.

The sales of tickets at the Union Station in St. Louis for the month of June, were about 30 per cent. less than for the same month last year. The following figures are printed in a St. Louis paper.

	LOCAL TICKETS	VALUE	COUPON TICKETS	VALUE	TOTAL SALES	VALUE
June 1893,	50,340	$106,549	4,632	$46,618	55,022	$153,167
June 1894,	38,291	73,772	3,511	33,443	41,802	107,216
Decrease		$32,777		$13,175		$45,951

The Minister of Finance of the Canadian Government has promised Parliament that the Government will appoint a commission to investigate the complaints of western farmers that freight rates on the Canadian Pacific are excessive.

The Southern Railway & Steamship Association has just concluded a meeting lasting several days at Manhattan Beach, N. Y. It appears from the reports given out that the rate disturbances were not settled though a majority finally voted in favor of restoring freight rates from New York and other northern points to the tariff existing previous to the severe reduction which was made about two weeks ago This will put rates on the basis of $1.14, first-class, New York to Atlanta.

The railroads of Texas have received the first freight tariff issued by the Railroad Commissioners of that state since the decision of the United States Supreme Court sustaining the authority of the Commission. The new tariff applies to lumber and is said to be more reasonable than the tariff issued by the Commissioners during their former reign.

The New York, Susquehanna & Western is now bringing about 100 cars of coal a day to its new terminal on the Hudson river at Edgewater, on the west side of the Hudson river north of Weehawken, N. J. This coal comes from the Wilkesbarre & Eastern Railroad, that which originates on the line of the Delaware, Lackawanna & Western being hauled now as formerly to the Jersey City terminals of the Lackawanna road.

Chicago Traffic Matters.

CHICAGO, July 25, 1894.

The roads are all reporting a gratifying revival of business, both freight and passenger. The excursion business, which was seriously interrupted by the strike, is picking up, but there will not be more than one-half the attendance at the various gatherings which there would have been had there been no disturbance. Wheat and oats are moving freely and earlier than was anticipated; and reports from the grazing lands indicate a heavy movement of cattle about to commence. If the railroad officers are not deceived in regard to the corn crop, the tonnage this fall will be all that can be desired.

No disposition is manifest on the part of the passenger men to be critical regarding alleged petty violations of agreements. This is owing largely to the small volume of business and the unwillingness to take any action that will still further deplete revenues.

There is no improvement in lake business. It has been found impossible to maintain the tariff rate of one cent a bushel on grain and the boats have been taking what grain they could get at ⅞ cent to Buffalo.

The Atchison announces that it will meet competition by making a one-way fare to Washington for the conclave of Knights of Pythias.

The western roads are talking about the resurrection of the trans-continental association as though the chances were improved for some action in the near future.

The only roads that are now ahead of their percentages under the eastbound freight agreement, are the Lake Shore, the Michigan Central and the Pittsburgh, Cincinnati, Chicago & St. Louis.

The movement for the reduction of car mileage which was inaugurated by the western trunk lines, is extending to roads outside that territory and has been agreed to by 65 roads up to the present time, including all the Texas and Colorado lines, the Atlantic system of the Southern Pacific, the Great Northern, the Northern Pacific and the Soo Line.

Chairman Blanchard, of the Central Traffic Association, has been seriously ill at New York, but is now convalescent.

A meeting of western lines is being held at St. Paul today to consider lumber rates in the northwest.

The shipments of eastbound freight, not including live stock from Chicago, by all the lines for the week ending July 21, amounted to 29,146 tons against 4,142 tons during the preceding week, an increase of 25,004 tons and against 41,359 tons for the corresponding week last year. The proportions carried by each road were:

Roads.	W'k to July 21.		W'k to July 14.	
	Tons.	P. c.	Tons.	P.c.
Michigan Central	3,945	13.8	792	19.1
Wabash	674	2.3	. .	0.0
Lake Shore & Mich. South	5,242	18.0	683	16.5
Pitts., Ft. Wayne & Chicago	4,217	14 5	570	13.8
Pitts., Cin., Chicago & St. L.	6,974	24.0	1,991	48.0
Baltimore & Ohio	1,619	5 6	. .	0.0
Chicago & Grand Trunk	1,569	5.4	. .	0.0
New York, Chic. & St. Louis	2,182	7.4	. .	0.0
Chicago & Erie	2,284	7 8	. .	0.0
C. C. C. & St. Louis	440	1.5	106	2,6
Totals	29,146	100.0	4,142	. .

Of the above shipments 48 tons were flour, 5,209 tons grain and millstuff, 12,743 tons cured meats, 3,119 tons dressed beef, 2,706 tons butter, 1,199 tons hides and 2,160 tons lumber. The three Vanderbilt lines carried 38.9 per cent., the two Pennsylvania lines 38.5 per cent.